NAVAL POSTGRADUATE SCHOOL
Monterey, California

THESIS

U.S. ARMY OFFICER GRADUATE EDUCATION:
NEW METHODOLOGY FOR ESTABLISHING
REQUIREMENTS AND UTILIZING ASSETS

by

Danny W. Braudrick

December 1986

Thesis Co-Advisors: Benjamin J. Roberts
                          Richard A. McGonigal

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87· 2 19 003

SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE

1a REPORT SECURITY CLASSIFICATION UNCLASSIFIED	1b. RESTRICTIVE MARKINGS
2a SECURITY CLASSIFICATION AUTHORITY	3 DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release distribution is unlimited
2b DECLASSIFICATION/DOWNGRADING SCHEDULE	

4 PERFORMING ORGANIZATION REPORT NUMBER(S)	5 MONITORING ORGANIZATION REPORT NUMBER(S)

6a. NAME OF PERFORMING ORGANIZATION Naval Postgraduate School	6b OFFICE SYMBOL (If applicable) Code 54	7a NAME OF MONITORING ORGANIZATION Naval Postgraduate School
6c ADDRESS (City, State, and ZIP Code) Monterey, California 93943-5000		7b ADDRESS (City, State, and ZIP Code) Monterey, California 93943-5000
8a NAME OF FUNDING/SPONSORING ORGANIZATION	8b OFFICE SYMBOL (If applicable)	9 PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER

8c ADDRESS (City, State, and ZIP Code)	10 SOURCE OF FUNDING NUMBERS			
	PROGRAM ELEMENT NO	PROJECT NO	TASK NO	WORK UNIT ACCESSION NO

11. TITLE (Include Security Classification)
U.S. ARMY OFFICER GRADUATE EDUCATION: NEW METHODOLOGY FOR ESTABLISHING REQUIREMENTS AND UTILIZING ASSETS

12. PERSONAL AUTHOR(S)
Braudrick, Danny W.

13a TYPE OF REPORT Master's Thesis	13b TIME COVERED FROM _____ TO _____	14. DATE OF REPORT (Year, Month, Day) 1986, December	15 PAGE COUNT 141

16 SUPPLEMENTARY NOTATION

17	COSATI CODES		18 SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
FIELD	GROUP	SUB-GROUP	Army Educational Requirements Board (AERB); Army Graduate Education System

19. ABSTRACT (Continue on reverse if necessary and identify by block number)
The purpose of this thesis is to review the Department of Defense (DOD) and the Army policies regarding graduate education at civilian institutions. Particular attention is paid to Congressional, General Accounting Office (GAO), Office of the Secretary of Defense (OSD) and Army reviews of DOD and Army policies and program execution. Issues investigated are: (1) The identification of graduate education requirements via an annual position-by-position validation process; (2) Whether or not this process identifies the Army's total requirements, functionally and cognitively; (3) Whether DOD and Army utilization policies regarding assignment of officers with graduate education to specific validated positions are appropriate; (4) Whether a better methodology to validate requirements and utilize officers with graduate degrees exists which will satisfy both the professional development needs of the officer corps and the Army. Keywords:

20 DISTRIBUTION/AVAILABILITY OF ABSTRACT ☒ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT ☐ DTIC USERS	21 ABSTRACT SECURITY CLASSIFICATION Unclassified
22a NAME OF RESPONSIBLE INDIVIDUAL Prof. Benjamin J. Roberts	22b TELEPHONE (Include Area Code) (408) 646-2792	22c OFFICE SYMBOL Code 54Ro

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U.S. Army Officer Graduate Education:
New Methodology for Establishing
Requirements and Utilizing Assets

by

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Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL
December 1986

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ABSTRACT

The purpose of this thesis is to review the Department of Defense (DOD) and the Army policies regarding graduate education at civilian institutions. Particular attention is paid to Congressional, General Accounting Office (GAO), Office of the Secretary of Defense (OSD) and Army reviews of DOD and Army policies and program execution. Issues investigated are: (1) The identification of graduate education requirements via an annual position-by-position validation process; (2) Whether or not this process identifies the Army's total requirements, functionally and cognitively; (3) Whether DOD and Army utilization policies regarding assignment of officers with graduate education to specific validated positions are appropriate; (4) Whether a better methodology to validate requirements and utilize officers with graduate degrees exists which will satisfy both the professional development needs of the officer corps and the Army.

Accession For	
NTIS GRA&I	☒
DTIC TAB	☐
Unannounced	☐
Justification	

By_____
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LIST OF DEFINITIONS

Advanced Civil Schooling (ACS)--The term used for all Army post-graduate civilian education programs, to include degree and non-degree producing.

Officer--This term includes both Army commissioned and warrant officers. Use of the term "officers" within this thesis refers to commissioned officers only.

Specialties--This term is used generically in reference to Army officer branches and functional areas.

AERB Obligated Asset--an officer, who upon completion of 26 weeks or more of full-time graduate schooling, is required by DOD policy to serve an initial utilization tour (36 months) in an AERB validated position.

Long Course--A full-time civilian post-graduate education program 26 weeks or more.

Short Course--Refers to the Army Short Course Program whereby officers attend short duration civilian courses which have application to their current assignments. This program augments the Army Training System.

Army Graduate Education System (AGES)--The author's own term. AGES is a subset of ACS. AGES refers to the Army system components associated with graduate degrees, master's and doctorate levels.

Transit, Holding and Student (THS) Account--The account that contains all Army personnel not actually occupying a position in the operational account. The THS includes those personnel in transit to new assignments, in hospitals and confinement facilities, and attending schools, military and civilian.

The Army Authorization and Documentation System (TAADS)-- Commonly referred to as "authorizations." TAADS includes all duty positions, officers and enlisted.

Table of Distribution and Allowances (TDA)--Refers to non-combat units and authorizations within these units. TDA's are also non standard type units.

Table of Organization and Equipment (TO&E)--Refers to combat units and authorizations within these units.

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Officer Personnel Management Directorate (OPMD)--The directorate within the U.S. Army Military Personnel Center (MILPERCEN) which operates the Officer Personnel Management System (OPMS). OPMS is the system by which officers are professionally developed, managed, assigned, utilized and evaluated. Special branches, Judge Advocate General Corps, Chaplain Corps and Medical Corps are not managed by OPMD.

Officer Personnel Management System (OPMS)--See Officer Personnel Management Directorate (OPMD).

I. INTRODUCTION

Since the Civil War, Army leadership has recognized that it cannot educate all its officers or fulfill all service educational needs via its own military schools. Today, the Army minimum civilian education goal is that all commissioned officers have bachelor's degrees and that 20 percent of OPMD-managed officers have graduate degrees. Graduate education is increasingly necessary in today's rapidly changing and advancing technological environment. The United States is confronted by the Soviet Union and its allies that pose a severe threat to the Free World, politically, economically, and militarily. This threat and the maintenance of world peace must be met by an American military capability of at lease equal competence. This means preparedness--of men, machines and material. The key, of course, is men--servicemembers' ability to execute war successfully through efficient and effective use of war machines and materials. In order to accomplish this mission, the force must be well-educated and trained. The time to educate and train (and equip) is before the advent of hostilities. The next war will be a "come as you are" conflict. And the winner (if a winner will exist) will be the one that has the best prepared military.

The American people have a right to expect and demand that their sons and daughters will be led by military leaders who are well-trained, educated and prepared. To that goal, the U.S. military must direct all its resources.

The U.S. military is a closed operating system. It cannot "hire" already trained and educated personnel. It must train and educate its own. And to accomplish this it must rely on internal training and educating systems--military schools, on-the-job training, individual self-development, etc.; and civilian educational institutions. The levels of expertise, functionally and cognitively, needed by the officers corps to meet modern preparedness demands cannot be met solely by internal military training and education systems. Increasingly, the U.S. military must rely on civilian colleges and universities to meet these needs.

In recognition of the above, the Army has developed the Army Graduate Education System (AGES)[1], the purpose of which is to identify specific Army requirements and then educate an appropriate number of officers to meet these requirements.

A. METHODOLOGY

From July 1981 to June 1984, this officer served at United States Army Military Personnel Center (MILPERCEN) as

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[1]This author's own term. This system is described in Chapter III.

the co-manager of this system. The duties required the incumbent to become the Army's spokesman and resident expert on officer graduate education requirements and programs. This period was fraught with tremendous uncertainty. There appeared to be serious disconnects in the process of identifying graduate education requirements (The House Appropriations Committee in 1978 described this process as "artificial"); and the inability to control or ensure utilization of offices with graduate education in positions validated as a requirement.

This officer and the other system manager, Major (now Lieutenant Colonel) Paul Terry set out to establish better information and managerial control mechanisms. The result was development of the U.S. Army Civil Schools Management Information System (CSMIS).

In June 1984, this author was assigned to the Professional Development of Officer Study (PDOS). This study's purpose was to review commissioned officer education and training needs 1985-2025 (see Chapter IV). By this time, this researcher was convinced that system management was not the core of AGES shortcomings (Chapter IV). The major difficulty was the system itself--the policies and procedures in the identification of graduate education requirements with regard to the benefits of graduate education within an environment of how officers are utilized and managed. Unfortunately, the combination of time (the study

lasted only about six months) and interference of other assigned duties, did not permit sufficient opportunity to thoroughly research the subject. The goal of this thesis is to conduct that research, identify specific shortcomings and recommend solutions.

The methodology of research was an investigation of the current system through a review of published studies, Congressional reports and Army historical files, in conjunction with this officer's experience as a former system co-manager.

Chapter II of this thesis investigates the costs and benefits which accrue to graduate education. Chapter III is a description of the functions, policies and procedures associated with the operation of AGES today. Chapter IV contains an investigation of DOD internal and external reviews of officer graduate education programs since 1947.

Recurrent criticisms coupled with this investigator's experience leads to specific conclusions as to system short-falls. Based on these conclusions, the final chapter (Chapter V) includes criteria upon which changes must be based; and the recommended changes to the system. This officer concluded that merely modifying the existing AGES was not appropriate--that a system overhaul was the most desirable, considering the criteria.

B. SCOPE

The scope of this thesis was limited as follows:

1. Graduate education policies as pertains to Army Offi-
    cer Personnel Management Directorate (OPMD)[2]-managed
    commissioned officers. This limits the investigation
    from considering specific shortcomings and recommended
    changes of other services' policies, programs and pro-
    cedures; Army Special Branches policies, programs and
    procedures; and other Army advanced civil schooling
    programs which are not degree producing.

2. Validation of Army graduate education requirements and
    utilization of commissioned officers obligated to
    serve in validated positions. This thesis does not
    include an investigation of other AGES components,
    namely, schooling programs, determination of annual
    schooling inputs, selection of officers to attend
    full-time schooling, re-utilization of officers with
    graduate degrees, selection of colleges and universi-
    ties, or system management, except where these compon-
    ents impact on validation and utilization issues.

C. ASSUMPTIONS

The following assumptions were made.

1. Total commissioned officer graduate education require-
    ments are not being identified under the current
    system.

2. Initial utilization rates of less than 100 percent of
    officers with graduate degrees obtained through full-
    time programs in validated positions is implicitly
    unacceptable. It should be noted that neither DOD nor
    Headquarters, Department of the Army (HQDA) has
    established explicit acceptable utilization rates.

3. Congressional interest in and criticism of DOD officer
    graduate education programs will continue, if not
    accelerate, until system changes are made in the vali-
    dation of requirements process.

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[2]Non-OPMD managed officers are those in the Special
Branches--Judge Advocate General Corps, Chaplain Corps, and
Medical Corps. OPMD is a directorate of MILPERCEN.

4. Army officer graduate education values mirror those of American society.

5. Army officers desire graduate education in order to perform better vice pursuing graduate education in order to improve post-service career opportunities.

6. Graduate education has functional and cognitive values.

D. RESEARCH QUESTIONS

1. What are the shortfalls of the AGES, especially with regard to its two major components, identification of requirements and utilization of officers with graduate degrees?

2. What changes are necessary to correct the shortcomings?

These questions describe the bulk of this study.

II. THE VALUE OF GRADUATE EDUCATION

A. INTRODUCTION

The ultimate goal of any officer professional development system is to strengthen and fortify the will, character, knowledge and skills of those in the profession of arms to preserve the future vitality of the Army and, therefore, ensure the capacity to defend the Nation. While willingness to anticipate and prepare for a changing system is essential, a fundamental principle is that officers in the profession of arms develop a vision of the nature of future war, expect that it will occur, and personally prepare to fight and win. Within this profession, all officers:
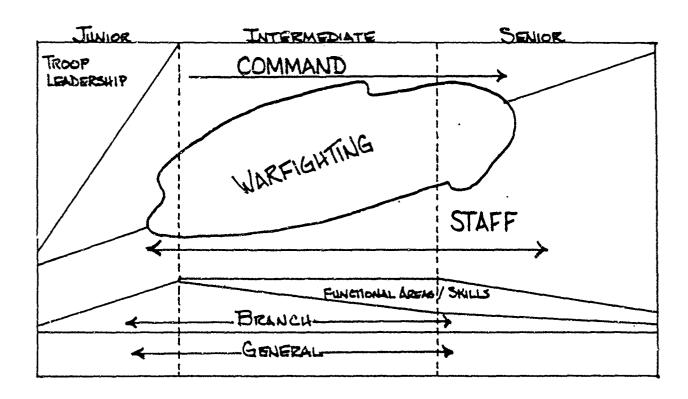
- Are warriors who are fully prepared and eager to lead and support in combat; are skilled in the use of weapons, organizations and tactics; are able to inspire confidence; and have the ability to accurately analyze problems and the boldness to take action to accomplish the mission.

- Instill the values that form the basis for a distinct life-style and code of behavior. Officers have good character and are worthy of special trust; command confidence and respect for their goal of excellence in their profession; personally accept the responsibility for protecting the nation and ensuring the morale and welfare of their soldiers; are selfless and self-disciplined to ensure their own moral and ethical well-being are maintained.

- Personally and progressively master the art and science of warfare while taking advantage of the education, training, and mentoring available to them; build on the fundamentals of the profession of arms by increasing their knowledge and skills in tactics, strategy,

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military history, and the human factors of war; learn how to build cohesive teams, develop leaders, train to win in combat, mobilize, deploy and sustain Army units.

- Learn and understand the environment--politics, economics, technologies, philosophies and theologies--in which the Army must effectively operate now and in the future; establish a life-long pursuit of remaining current in events and environmental factors; continue development of personal ability to effectively lead the Army and efficiently manage its resources across the full spectrum of conflict.

- Are action-oriented in their thought processes--the intellectual agility to think, plan, assess, and apply judgment in making decisions; foster innovation through bold, creative thinking; and ensure tasks are accomplished with the least expenditure of lives and resources. (Professional Development of Officers Study files, 1984)

The educating of an Army officer to master the art and science of war is progressive, starting with the junior second lieutenant up to the most senior levels of executive leadership. All education must advance the individual's acquisition of skills and knowledge to successfully execute war, if it occurs. Figure 2-1 is a knowledge model for officers. All officers must receive education and training in troop leadership/command and staff skills associated with their branch, functional areas and general military skills-- all within a context to promote their war fighting acumen. To produce officers with the requisite knowledge and cognitive capacities to assume the Army's highest leadership positions is accomplished through a combination of three sources: Military schooling (professional and functional), a variety of assignments and experiences, mentoring, self study and civilian schooling.

KNOWLEDGE MODEL

Source: Author's unpublished manuscript

Figure 2-1   Knowledge Model

The time to prepare for war is during peacetime--this means developing and procuring machinery; developing national and theatre strategies and tactics; training units; and developing, training and educating the enlisted and officer corps. Thomas Jefferson stated that to have a democracy work without an educated and informed electorate is something that never was or never will be. The same can be said for the defense of the Nation--properly trained and educated soldiers in the values of the Nation, the art and science of war and the environment in which they live is a prerequisite to the maintenance of peace and successful execution of war. Parents have the right to expect that during war their sons and daughters will be led by competent, educated military leaders--the best the services can produce.

Nevertheless, there is considerable debate between Congress and the services, and within the services as well regarding how best to professionally develop the officer corps. Some of this debate has historically focused on the services' graduate education programs: What are the specific requirements? How many should attend full-time? How does one utilize these assets most effectively following matriculation? What are the real costs and benefits? This chapter will look at the costs and benefits of officer graduate education. Subsequent chapters will address the other issues.

B. COSTS

Any cost-benefit analysis of the Army Graduate Education System (AGES) would be very difficult. Costs are readily available and many are quantifiable. But the measurement of benefits is not easy; most are not quantifiable. Any cost analysis must include not only the relatively minor costs of tuition and fees (Arm. Fully-funded Programs), but also the more important and significantly larger alternative or opportunity costs of foregone opportunities. Opportunity costs must consider the salary and benefits (budgetary costs) the officer receives while attending full-time schooling and the loss to the operational manpower account in terms of manyears officers spend in school.

1. Budgetary Costs

The Army Fully-funded Program (long course) for FY87 was budgeted at $8.7 Million (MILPERCEN files, 1986). This money is used for new inputs and to continue those officers in school for the previous year. This money pays tuition and fees (i.e., $600 per annum, per student for texts and supplies).

2. Opportunity Costs

There are primarily two costs associated with this category. First is the officers' pay and allowances. The pay and allowances expended to produce the 650 officers with graduate degrees inputed in FY85 in Army full-time programs was approximately $37 Million (see Table 2-1).

TABLE 2-1

FULL-TIME ARMY GRADUATE STUDENTS PAY
AND ALLOWANCES FOR FY85 INPUTS

Inputs	Manyears[1]	Annual Individual Pay & Allowances[2]	Total Pay and Allowances to Produce 650 Graduates
650	1024.5	$35,959	$36.8 M

1. Computed separately for maximum allowable time for each Army full-time program.

2. Used pay and allowances for captains over eight years of service with dependents; Variable Housing Allowances estimated at $200/month.

The second opportunity cost is the burden placed on the operational account. For each officer in school means that an officer is not available to serve in a battalion, brigade or in any other authorized position. The average number of officers in the schools account (for all schools, military and civilian) September 1983-August 1984 was 6387 (Office of the Deputy Chief of Staff for Personnel (HQDA), 1984 files).[1] Fulltime graduate students represented about 15 percent of this total.[2] (See Appendix A for Transit, Holding and Student (THS) data.) Since about ninety percent of all fulltime graduate students are captains,

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[1]Grades 01-06.

[2]Used 18 months as average program length (although some programs are for 24 months) and 650 annual inputs. This computes to about 975 graduate students in school per year.

approximately 25 percent of the captain's student account is in graduate school.

Table 2-1 also shows that for FY85 graduate school inputs, the cost in manyears to produce graduate degrees for 650 officers is about 1,024 manyears. In comparison, the cost in manyears for the Army's controversial Combined Arms and Services Staff School (CAS[3])[3] is approximately 519 manyears[4]--about half that of fulltime graduate programs.

C. BENEFITS

Whereas the costs of the Army's fulltime graduate programs are measurable, measuring benefits in terms of dollars and cents is not as easily accomplished. The National Board on Graduate Education identified three basic benefits of graduate education. They are: [Ref. 1:p. 32]

- The education and development of skilled individuals.

- The production of knowledge

- The preservation and transmission of knowledge.

These benefits have application within a military context. However the nature of the military establishment and the need to develop its personnel within a closed system must accrue additional benefits in order to justify these programs. These benefits would include improved

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[3]CAS[3] is a captain's level six week course to prepare them for staff level work. It is controversial in terms of the time the captain will be in school instead of on the job.

[4]Goal is to input 4500 captains per year.

productivity; use of better problem solving and decision making techniques; and less rigidity, prejudice and stereotyping.

An economic analysis reveals that education provides the individual and his society economic benefits. Theodore W. Schultz studied the investment of education within the civilian work force and the rate of return on this investment. He estimated this return increases the Gross National Product by .7 percent annually. [Ref. 2:p. 45] Edward F. Denison established education as a major factor in the nation's economic growth. He estimated it at .75 percent [Ref. 2:p. 44]). In other words, both Schultz and Denison argue that formal education plays a major role in increasing the aggregate productivity of workers. One can conclude, therefore, that as an aggregate, more highly educated workers are more productive than those with less education.

The Bureau of Labor Statistics indicates that for males, age 25, with five years or more college will have lifetime earnings 12 percent greater than those within the same cohort with just four years of college. For females, age 25, this figure is even higher, 44 percent. Table 2-2 shows beginning salaries based on offers made by business, industrial, governmental, non-profit and educational employers. Of particular interest is the substantial differences in wage offerings between bachelor's, master's

TABLE 2-2

MONTHLY SALARY OFFERS TO CANDIDATES FOR DEGREES BY FIELD OF STUDY FOR 1983

	Bachelor's	Master's	Doctor's
Accounting	1,565	1,891	(NA)
Business general	1,486	2,215	(NA)
Marketing	1,411	2,122	(NA)
Engineering:			
Civil	1,869	2,260	2,936
Chemical	2,228	2,404	3,130
Electrical	2,128	2,461	3,200
Mechanical	2,096	2,400	3,150
Nuclear	2,078	2,386	(NA)
Petroleum	2,568	(NA)	(NA)
Engineering tech.	2,006	(NA)	(NA)
Chemistry	1,712	2,203	2,694
Mathematics	1,799	2,124	2,585
Physics	(NA)	(NA)	2,903
Humanities	1,380	1,617	(NA)
Social sciences	1,320	1,606	(NA)
Computer science	1,941	2,359	(NA)

Source: <u>Statistical Abstract of the United States:</u> <u>1985</u>, U.S. Department of Commerce, Bureau of Census, 105th Edition, Washington, D.C., 1984

and doctoral degrees. For example, for the civil engineering field of study in 1983, master's level receives $381 per month more than does the bachelor's level; doctorate receives $1,067 more.

Many larger corporations across the U.S. have long recognized the value of promoting education among its employees. McDonnell Douglas will reimburse all tuition costs for those individuals who complete a graduate program. In 1983 the BDM Corporation paid tuition, fees and book costs for 301 employees who attended courses leading to

graduate degrees. [Ref. 3:pp. 19-21] Boeing Airplane
Company corporate policy states:

> The management development program will emphasize self-development by all managers, on-the-job development of all managers, personal attention of each manager to the development of his subordinates, and the integration of these individual actions with organizational management development under an overall system.

Nearly four percent of Boeing employees attended graduate
level courses in 1981 and 1982; 114 received graduate
degrees. [Ref. 3:pp. 19-21]

Based on the aforementioned data, education promotes
increases in productivity for the organization and
concomitant higher wages for the employee--and probably
improved promotion potential, also. One can safely assume
that increased productivity occurs in the military as the
educational levels of its servicemembers increases. Today,
a high school diploma is the minimum education level for
enlisted personnel entering the Army; a bachelor's degree is
a prerequisite for selection to major for Army officers.
[Ref. 4:p. S-4-2]

For the Army officer, economic improvement can only be
influenced by way of promotions. Army officer promotion
statistics indicate that graduate-level education improves
one's promotion potential. Lieutenant colonels boards use a
multiattribute decision-making model known as the Technique
for Order Preference by Similarity to Ideal Solution (see
Appendix B for explanation). This model applies six

criteria to predict future success. These are (MILPERCEN officials, October 1986):

(1) Military Education Level—professional military schooling; for LTC's specifically, completion of command and staff college.

(2) Civilian Education Level.

(3) Quality—refers to quality of previous assignments.

(4) Performance—performance history from officer efficiency reports.

(5) Physical fitness/military bearing and appearance.

(6) Potential.

Each promotion board member numerically rates each file against these six criteria based on his predetermined weighting for each one.

Table 2-3 shows the selection rates by civilian education level of majors selected in the primary zone for promotion to lieutenant colonel by the 1985 selection board. The results indicate that selection rates are significantly higher for officers with graduate education than those without.

William J. Taylor Jr., has suggested that there are three pillars on which any argument for officer graduate education must rest. These are: Scientific and managerial skills, improve capabilities for human judgments and inculcate national attitudes and values. Each is discussed below. [Ref. 5:p. 164]

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TABLE 2-3

SELECTION RATES[1] BY CIVILIAN EDUCATION LEVEL,
1985 ARMY LIEUTENANT COLONEL SELECTION BOARD

	# Considered	# Selected	% Considered w/applicable degree level	% Selected w/applicable degree level
Doctoral	13	10	.7	77
Master's	1259	1060	63.6	84
Bachelor's	660	416	33.3	63

[1]Primary Zone

Source: MILPERCEN files, 1985

1. Develop Technical and Managerial Skills

The society we live in has become tremendously more scientific and technical since the launch of Sputnik. The requirement for more sophisticated methods to problem solving has steadily increased. Table 2-4 shows the growth of college and university degrees 1960 to 1987 (projected).

A 1978 survey of senior executives (Table 2-5) shows that managerial degrees, like MBA's, represent the predominant number, master's and doctorate, held. Ten years previously, law degrees were more common than MBA's by a two to one ratio. Now more than fifty percent of senior executives have graduate degrees, predominantly in management disciplines.

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TABLE 2-4

NUMBER OF EARNED DEGREES PER YEAR IN THE U.S.
1960-61 TO 1986-87 (000'S)

Year	Bachelor's	Professional*	Master's	Ph.D.
1960-1961	370	25	82	11
1975-1976	926	63	312	34
---------------------------------Projections---------------------				
1980-1981	1,021	70	373	39
1986-1987	979**	75	439	42

* Includes all medical, law and theology degrees
** Indicates that the post-World War II boom has ended

Source: Projections of Education Statistics to 1986-87,
National Center for Education Statistics, Wash-
ington: U.S. Government Printing Office, 1978,
p. 108.

TABLE 2-5

TYPE OF GRADUATE DEGREE HELD BY
SENIOR EXECUTIVES IN INDUSTRY

	Presidents	Bank President	Finance Officer	Executive Officer	Chief Pers. Officer
MBA	31%	58%	58%	43%	35%
Law	41%	33%	22%	39%	27%
Other					
Master's	22%	5%	15%	9%	30%
Doctor's	7%	4%	5%	9%	8%
Total	100%	100%	100%	100%	100%

Source: Heidrick and Struggles, Inc., Graduate Educa-
tion Growth Among Senior Executives in Indus-
try, 1979, Chicago, Illinois, p. 15.

Similar growth has occurred in the electronics
industry. A 1978 survey of 40,000 professional engineers
indicated that 42 percent of supervisory engineers and 32

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percent of non-supervisory engineers have graduate degrees. This percent has grown by ten percent since 1968 and is projected to grow during the next ten years (1988). [Ref. 6:p. 8]

A survey of the Army officer corps (grades O1-O6) by the Professional Development of Officers Study (PDOS) in 1984 supports Taylor's pillar of the need for officers with greater technical and managerial skills. When asked if a graduate degree is necessary for proficiency in one of their specialties, over 35 percent of the respondents with advanced degrees "strongly agreed"; over 72 percent "agreed." Doctoral level respondents felt that their degree was "extremely" helpful in their current assignments at a 60.5 percent rate; master's level respondents, 41.9 percent. Furthermore, nearly 80 percent of those individuals with graduate degrees believe Army officers need advanced civilian schooling "even if the Army does not fund"; among all respondents there was a 70.0 percent agreement. [Ref. 4:p. S-6-1] Appendix C contains the responses to the civilian schools portion of the PDOS Survey.

2. Increase the Capability for Human Judgment

Military judgment and decisions are often character-ized as being rigid, narrow-minded, based solely on pre-established policies, regulations, field manuals and global lessons learned. Decision making is consequently inductive in nature--doing things a certain way because "that's the

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way we've done it in the past." But as the psalmist said, "where there is no vision, the people perish." BG (Retired) Peter Dawkins, in reference to this adage, believes there is a need for the military to not only place emphasis on "getting it done" but "thinking about it" as well—"why do we do things the way we do?" "Is there a better way?" [Ref. 7:p. 159]

Heavy reliance on inductive reasoning has a tendency to limit discovery of new ways, new methodologies and new solutions—movement away from an absolutist approach to problem solving and decision making, and toward more deductive means.

Adam Yarmolinsky believes there is a need for military officers to be exposed to the current mainstream of intellectual thought and activity associated with their specialties. And that mainstream is civilian. Merely rubbing shoulders on the job, military and civilian, is not sufficient. Time must be spent in intellectual renewal of,

> the interplay of theory to practice, study and action, and between generalization and specific action, that maintains the vital tension that keeps the profession alive and growing. [Ref. 8:p. 152]

A full-time graduate program exposes the officer to a variety of ideas and concepts which may be very different from those to which he has been exposed. The individual is challenged to rise to higher levels of intellectual thought which forces him to critically analyze previous processes

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and methodologies--to find new approaches--to seek diverse and more alternative approaches to problem solving.

Graduate schooling reduces the mental barriers in which the military officer has previously operated and generates a freedom of inquiry divorced from a solely military context. The graduate school experience "involves developing a mind-set oriented not to the answer but to solutions." [Ref. 7:p. 160] It raises his frame of reference in order to deal with a wide variety of complex issues--within his military specialty and occupation and outside, as well. [Ref. 9:pp. 1-16]

Elliott Jacques and T.O. Jacobs have done considerable research in the development of executive leadership. Of particular interest is Jacques' Stratified Structure Theory (SSI) [Ref. 9:pp. 1-16]. SST is the concept that work can be defined in terms of time frames in which objectives are planned and accomplished. The time frames in which work is completed varies by organizational level, or stratum. For example, the time frame for a general manager is much less than that for a chief executive officer. Also varying by organizational level is the cognitive capability one must possess in order to accomplish work demands at his particular organizational stratum. Cognitive capability has two components. They are, "cognitive equipment"--knowledge, skills, temperament, and values; and "cognitive power"--innate mental force. A

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person's cognitive capabilities are a factor which determines at what organizational level one can successfully operate. Jacques' research shows that one's cognitive capabilities increase by age and can be measured and thus an appropriate organizational level of work determined.

Cognitive capability which increases with age theoretically can be improved through vigorous educational experiences, especially cognitive equipment. One's cognitive power can be improved also--to a point where the individual's innate potential is maximized. Such improvement could boost a person's cognitive capabilities to an extent which would allow him to operate successfully at the next higher organizational stratum at an earlier age.[5]

To test the hypothesis that graduate education modifies officers' values and attitudes, Raoul Alcala conducted a survey of Army, Navy and Air Force officers. The results are summarized below [Ref. 10:pp. 133-149].

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[5]Interviews on October 3, 1986 by the author with Elliott Jacques, T.O. Jacobs, Major Larry Boyce and Jim McGuire at the Army Research Institute (ARI), Alexandria, Virginia. During these interviews, Boyce and McGuire stated that neither they nor other researchers are able to empirically demonstrate the theory that cognitive capabilities can be substantially improved through a vigorous educational experience. However, they believe this improvement does occur. For example, cognitive improvement through education has long been recognized by private industry. Firms' hiring, promotion and compensation policies are often based on a combination of experience and education levels. This means there is a tradeoff of education for experience.

a. Absolutist

Officers with graduate degrees tend to be less absolutist than those without. Army officers with graduate degrees were 61 percent less absolutists; without graduate degrees, 6 percent less (at a .10 significance level).

b. Diversity of Opinions

Officers with graduate education tend to have more diverse opinions on complex issues than do those with lower educational levels. Army officers with graduate degrees displayed a wider standard deviation in the distribution of responses dealing with approaches to world peace, causes of war and the Vietnam rationale.

3. Inculcate Societal Attitudes and Values.

The military community has traditionally physically isolated itself from the surrounding population in which it lives. Servicemembers live, shop and socialize within the confines of the military installation. This separation has been somewhat alleviated with the advent of the All-Volunteer Army in the mid-1970's and the resulting substantial increases in military pay. The pay increases provided an opportunity for more military families to buy homes in the civilian community. However, in the 1980's economic conditions (weakening of military compensation and high interest rates) have forced many military members back into on-post military housing. Furthermore, the military, still emerging out of the chaos of Vietnam, is still viewed

suspiciously in some quarters--especially among the academic and intellectual segments.

The graduate education experience on a civilian campus offers the opportunity for the officer to feel "the pulse of the civilian society they serve--its problems, fears, ideals and aspirations." [Ref. 11:p. 258] Having officers on civilian campuses also cuts the other direction. Civilian educators and students can learn about the military profession. Stereotypes are erased through the exchange of views, perceptions, etc. Often young professors and students' negative preconceptions are significantly modified after exposure to young, intelligent military officers. Taylor and Bletz argue that "For this reason alone, there is every reason to continue and expand the enrollment of officers in full-time graduate school on campuses. . . ." [Ref. 11:p. 259]
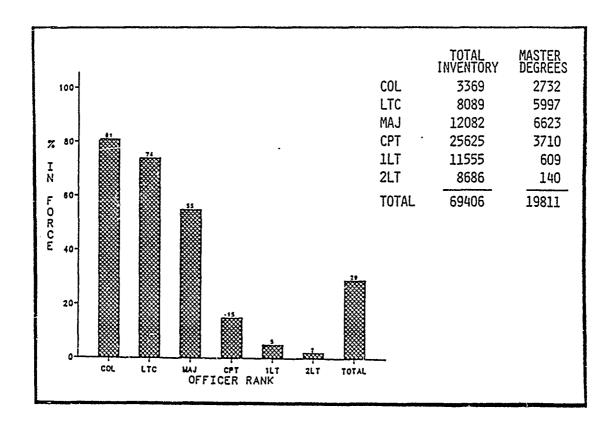
D. CURRENT ARMY OFFICER EDUCATIONAL LEVELS

As of 1985, 97.7 percent of all commissioned OPMD[6] managed officers have bachelor's degrees; over 28.5 percent have graduate degrees. Tables 2-6 and 2-7 show the OPMD inventory education attainment levels for master's and doctorate, respectively. The sources of these degrees are contained in Table 2-8. Nearly 50 percent of all degrees

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[6]OPMD--Officer Personnel Management Directorate, MILPERCEN managed officers. This does not include Judge Advocate General Corps, Chaplain Corps or the Medical Corps.

TABLE 2-6

MASTER'S ATTAINMENT LEVEL,
OPMD-MANAGED OFFICERS, 1985

	TOTAL INVENTORY	MASTER DEGREES
COL	3369	2732
LTC	8089	5997
MAJ	12082	6623
CPT	25625	3710
1LT	11555	609
2LT	8686	140
TOTAL	69406	19811
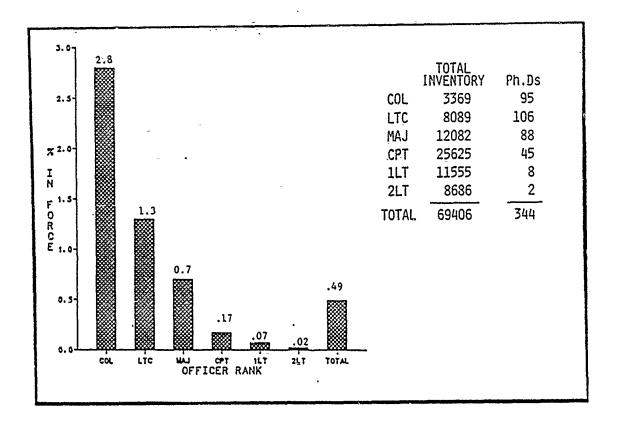
Source: MILPERCEN files, 1985

TABLE 2-7

DOCTORAL ATTAINMENT LEVEL,
OPMD-MANAGED OFFICERS, 1985

	TOTAL INVENTORY	Ph.Ds
COL	3369	95
LTC	8089	106
MAJ	12082	88
CPT	25625	45
1LT	11555	8
2LT	8686	2
TOTAL	69406	344

Bar chart — % IN FORCE by OFFICER RANK:
COL 2.8, LTC 1.3, MAJ 0.7, CPT .17, 1LT .07, 2LT .02, TOTAL .49

Source: MILPERCEN files, 1985

TABLE 2-8

SOURCES OF GRADUATE DEGREES (%)[1]

On Own Time (post accession)	48.3
Fully-Funded Program (FFP)	30.2
Cooperative Degree Program (COOP)	6.5
Preaccession	6.3
Degree Completion Program (DCP)	5.7

[1] All commissioned officers, grades O1-O6

Source: [Ref. 4:p. S-6-1]

are obtained by officers on their own. This would indicate that officers value graduate education as a necessity for a successful military career. This fact is further substantiated by the fact that nearly 80 percent of the PDOS Survey respondents believe that officers need graduate schooling even if the Army does not fund (Appendix C).

E. CONCLUSION

Perhaps the benefit of education for the Army officer corps can best be summarized as follows:

> Education . . . gives a man a clear conscious view of his own opinions and judgments, a truth in developing them, and eloquence in expressing them, and a force in urging them. It teaches him to see things as they are, to go right to the point, to disentangle a skein of thought, to detect what is sophisticated, and to discard what is irrelevant. It prepares him to fill any post with credit and to master any subject with facility. [Ref. 12:p. 238]

III. THE ARMY GRADUATE EDUCATION SYSTEM TODAY

Before an analysis of the Army's Graduate Education System (AGES) can be made, one must understand how it operates today from the identification of graduate education requirements to the utilization and re-utilization of officers with graduate education. There are seven functions associated with the Army Graduate Education System. They are:

a. Identification of specific requirements.

b. Establishment of full-time graduate education quotas.

c. Programs.

d. Selection of officers for graduate study.

e. Utilization of officers against specific requirements.

f. Re-utilization of officers against specific requirements.

g. Management information system (MIS).
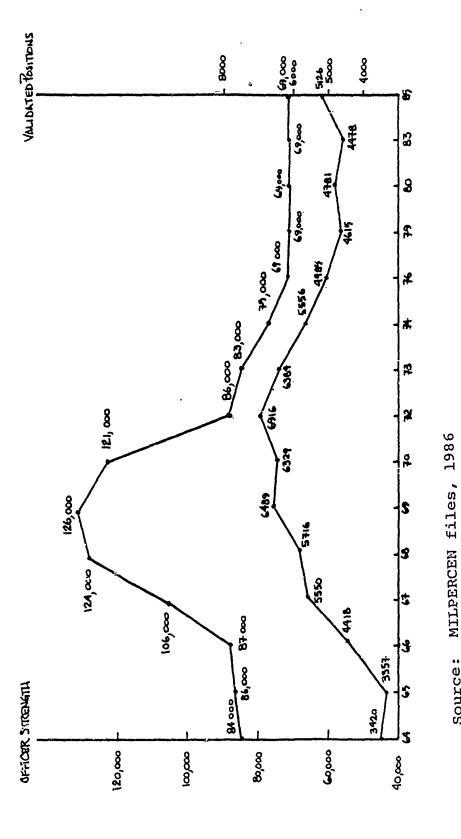
A. IDENTIFICATION OF SPECIFIC GRADUATE EDUCATION REQUIREMENTS

The Army system for identifying graduate education requirements is the Army Educational Requirements Board (AERB). This process is essentially similar for all the services--the identification of specific positions which require officers with graduate education (master's and doctorates), captain (03) through colonel (06) "for optimum performance of duties" [Ref. 13:p. 2]. This directive,

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Policies on Graduate Education for Military Officers (July
30, 1974), establishes DOD policies on identification of
specific graduate education requirements (by position) and
the utilization of qualified officers against these
requirements (i.e., validated positions).   Although the
directive does not specifically call for the services to
validate requirements via an officially constituted board,
each service does so.

In order to better coordinate world-wide civilian
education requirements, the first AERB was conducted in 1963
under the direction of the Office for Personnel Operations.
The board consisted of eleven members from the Headquarters,
Department of the Army (HQDA) primary and special staffs.
AERB's were held annually until 1974 when it was decided to
hold boards triannually (zero base) with, as required,
"standby boards" in between, to review new requests for
validation.   Figure 3-1 shows AERB validations 1964 to 1985.
In 1983 the board reverted to an annual review.   The purpose
of the validation process, as stated in DOD Directive
1322.10, is to identify all positions, captain to colonel,
which require incumbents with graduate education for optimum
performance of duties.   From this basic premise, the Army
process diverges from the directive.

1. The AERB validates positions at master's or doctorate
    for commissioned officers; baccalaureate and master's
    level for warrant officers.

Source: MILPERCEN files, 1986

Figure 3-1 Army Commissioned Officer Strength vs. Army Validated
Positions (OPMD Managed), 1964-1985

2. The AERB did not use the criteria contained in the directive during its 1983 and 1985 boards as this criteria (Appendix D) merely represents a categorization of positions. The 1983 and 1985 boards used criteria contained in Appendix E. Additionally, Army Regulation (AR) 621-108, <u>Military Personnel Requirements for Civilian Education</u>, states that positions are appropriate for validation if the expertise required of the incumbent is not available through the Civilian Short Course Training Program or the Army Training System. It should be noted at this point that AR 621-108 contains the only criteria provided originators of requests for validation.

3. Beginning in 1985, the AERB validated positions for Training With Industry (TWI), a non-degree producing training program conducted in cooperation with select private industries.

AR 621-108, Military Personnel Requirements for Civilian Education, governs the policy and procedures for the identification of graduate education requirements and the filling of validated positions. The Army Graduate Education System today, as in 1963, is under the purview of the Deputy Chief of Staff for Personnel (DCSPER), HQDA. He authorizes annual AERB's, approves board scope, procedures, and results. The Commander, US Army Military Personnel Center (MILPERCEN) is responsible for conducting the AERB. Proponents as members of the board, act as advisors. [Ref. 14:p. 2]

Conducting an AERB is a four phase process which requires approximately nine months. These phases are discussed below.

1. <u>Phase 1, Preparation</u>

During this phase, MILPERCEN generates an electrical message to all Army activities, joint and unified commands, other DOD services, and appropriate non-DOD government

departments (for example, State Department) announcing the convening of an AERB. This saturation approach is to ensure that every governmental organization to which Army officer personnel are assigned is aware of an upcoming AERB. A great deal of lead time to the convening of an AERB is necessary because of the tremendous workload in preparing and reviewing the requests from the point of origination through the chain-of-command. For example, in preparation for the 1983 AERB, the announcement of the board was made in May 1982. Submission of requests were due to MILPERCEN in August 1982 for a board held in January 1983.

Upon receipt of the requests at MILPERCEN, each is reviewed for completeness and appropriateness by the AERB action officer. "Completeness" refers to inclusion of all pertinent data--position coding, grade, justification, etc.; "appropriateness," to matching academic discipline to controlling specialty. For example, the discipline, nuclear effects engineering, supports the functional area, Nuclear Warfare (FA 51), but would not support the Functional area, Personnel Management (FA 41). Appendix F contains the listing of all officer branches and functional areas with associated supporting academic disciplines. Many positions submitted were incorrectly coded. If the position's primary duties are those associated with Foreign Area (FA 48), it should not be controlled by Munition Material Management (FA 75).

Approximately ten percent of all submissions for the 1983 AERB were incomplete or inappropriate, therefore, requiring return to originator. In other cases, the 1983 AERB made unilateral coding and grading change to individual positions during its deliberations to ensure consistency. Validation was approved pending changes to unit authorization documents.

After the initial review by MILPERCEN, the requests are collated by controlling specialty (branch or functional area) and forwarded to the appropriate proponent. Proponents are generally the branch or functional area school commanders. For example, the Infantry proponent is the Commander, U.S. Army Infantry Center and School, Ft. Benning, Georgia. The proponent is the source of education and training requirements and doctrine for particular branch or functional area. The proponent determines which requests are supportable and in order to effect standardization, identifies like positions in like organizations for which no request for validation was submitted. By November of 1982, the proponents provided MILPERCEN the data pertaining to each position which they recommended for validation at the AERB.

2. Phase 2, Conduct of the AERB

The 1983 AERB was conducted in Alexandria, Virginia, 24-30 January 1983. (This author was the board recorder.) This board represented two major departures from previous

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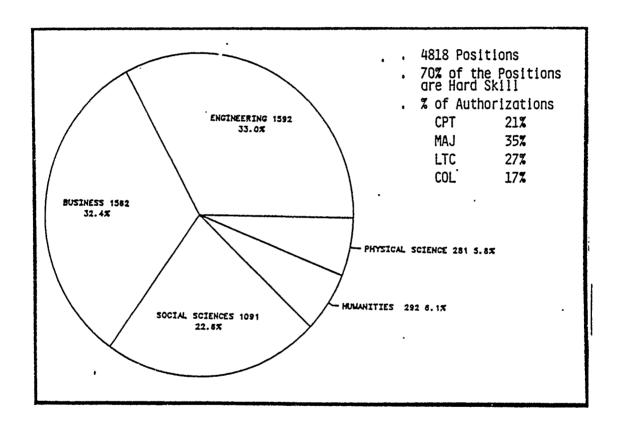
boards. First, board membership since 1963 was HQDA staff proponent representatives. For most boards this consisted of 8-12 voting members. Boards lasted 4-6 weeks. Representation was based on departmental function (operations, logistics, intelligence, etc.) rather than overall officer professional development needs. In 1982, the Chief of Staff of the Army (CSA) transferred proponency to primarily the training centers where training and doctrine formulation occurs. Changing proponency from departmental function to a specialty function, substantially increased the specialization characteristics of proponency and subsequently, the number of proponents. This change led to a quantum increase in board membership. The 1983 AERB was composed of 38 members. With the larger board, deliberations only took seven days. The second major departure, not independent of the change in proponency, was a move to validate positions by officer specialties rather than academic disciplines. Previously, boards had validated solely by discipline. For example, the 1981 AERB (a standby board) validated 317 positions, captain to lieutenant colonel for the academic discipline, Area Studies.[1] The 1981 board's report contains no break-out of validations by specialty. The 1983 AERB departed from this procedure. It validated

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[1]The number of validations by discipline were the basis for determining "shortage disciplines." Shortage disciplines were disciplines for which AERB validations exceeded inventory (more will be covered on this subject later in this chapter).

positions by officer specialty and associated disciplines The 1983 AERB's results were approved by the DCSPER. The results are contained in Appendix G.
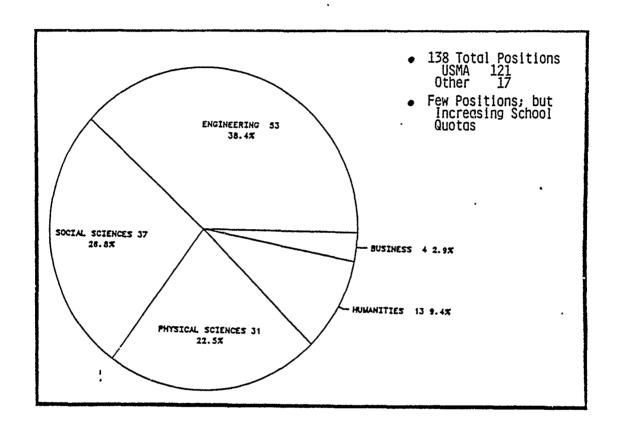
A total of 4478 officer positions were validated of which 17 were at the doctorate level (this does not include 121 military professor positions at the US Military Academy --USMA which require doctorates). (See Figures 3-2 and 3-3 for a breakdown of validations by fields of study, master's and doctorate levels, respectively.) USMA requirements were established off-line and are not within the scope of this thesis. This total, however, does include 18 Judge Advocate General Corps (JAGC) and 178 Chaplain Corps master's level validations. The board reviewed a total of 4619 officer positions; only 141 were rejected. This represents a selection rate of $.97^2$. Many were rejected for being poorly written. It should be noted that there were no documented cases of a request being rejected, however, in the submission chain-of-command or by any pro-ponent prior to the board. The conclusion, therefore, is that the primary predictor for obtaining a position's vali-dation is the preparation and submission of a request, correlation coefficient of .97.

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[2]The 1974 AERB had a selection rate of over .90. High rates of approval by AERB's is not unusual.

Source: MILPERCEN files, 1984

Figure 3-2 Master's Degree Validations, 1983
AEP.B (OPMD managed only)

Source: MILPERCEN files, 1984

Figure 3-3 Doctoral Degree Validations, 1983
               (OPMD managed only)

3. Phase 3, Notification/Validation Adjustments

Following board approval, MILPERCEN notifies requesting agencies of the board's outcome—specifically each organization's validations. Validated positions require special handling by the owning organizations. Authorization Documents (The Army Authorization Document System—TAADS) must carry the notation indicating "validated position." And personnel requisitions against validated positions must likewise indicate its special status. Furthermore, as in the case of the 1983 AERB, position coding changes via TAADS must be made for positions validated pending position re-coding or re-grading.

The Army is a non-static organization. This is especially true for authorizations. As a unit's mission or responsibilities change, as with any reorganization, corresponding changes must be made in the unit's authorization documents. This is most evident in the Table of Distribution Allowances (TDA) organizations which are non-standard, non-combat types[3]. TAADS officials at HQDA estimate that about ten per-cent of all authorizations are annually modified. Of course any change to a validated position, especially grade or coding, could affect its validation.

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[3]Since over 90 percent of AERB validations are in TDA organizations, the AERB Authorization File (validated positions listing) is continually undergoing some change. These changes are tightly coordinated between MILPERCEN and field commanders.

4. Phase 4, Fill of Validated Positions

Organizations anticipating a vacancy or having a vacancy, submit a requisition denoting validated position to MILPERCEN. MILPERCEN is then tasked to identify an officer with the appropriate specialty, grade, discipline (or since 1983, a discipline from a set which supports the required specialty) and degree level (master's or doctorate) who is available for assignment.

B. ESTABLISHMENT OF FULL-TIME GRADUATE EDUCATION QUOTAS

The establishment of quotas is closely tied to the philosophy of how officers are professionally developed, utilized and managed. The system to do this is the Army Officer Personnel Management System (OPMS). OPMS was born in 1972. Army leadership recognized that the Army was becoming more specialized and technical and officer duties more diverse. A more comprehensive system was needed.

The following is a brief description of this system. Upon commissioning, lieutenants begin their development by attending their branch (Infantry, Artillery, Quartermaster, etc.) basic course which provides them entry level competencies associated with their branch. Some will receive additional training like airborne, ranger, etc. The officers initial assignment "should allow the officer an opportunity to apply school training and develop leadership

skills . . . in troop units whenever possible." [Ref. 15:p. 8]

During the captain phase the officer continues his branch development. For many captains, they will be designated a second specialty (i.e., functional area) in addition to their branch specialty. This designation occurs no later than the eighth year of commissioned service. By the eighth year, most captains should complete "branch qualification" (company command, if appropriate to the branch's completion of the branch Officer Advance Course) [Ref. 4:p. S-4-1] and become available for training/education and duty in their designated functional area. Functional areas are "a grouping of tasks or skills which usually require significant education, training and experience. Officers may not be accessed . . . into a functional area." [Ref. 16:p. 20] Sixty-seven percent of all AERB validations are in functional areas. Therefore, most officers obtain full-time graduate schooling in disciplines which support their functional areas. For example, combat arms branch officers (Infantry, Armor, Artillery, and Air Defense), compose 34.9 percent of the total officer inventory. However, AERB validations for these branches represent only 3.7 percent. Table 3-1 shows the 1983 AERB validations by arms and the functional area category.

Between the captain's sixth and eighth years, upon completion of branch qualifications, is the ideal time for

TABLE 3-1

VALIDATIONS BY ARMS CATEGORY, 1983 AERB

Category	Percent of Validations
Combat Arms	3.7
Combat Support Arms	23.6
Combat Service Support Arms	12.5
Functional Areas	60.2
	100.0%

Source: MILPERCEN Files, 1984

graduate schooling. It represents a period of transition and allows 10-12 years utilization after two years of schooling prior to the 20 year retirement point.

The task for MILPERCEN is to determine how many captains to send to graduate school, against what specialties and combinations of specialties, in which academic disciplines in order to develop an inventory at the grade of captain which, as it depletes over the next 10-12 years (due to separations and promotion passovers), will still meet AERB requirements for grades major through colonel.

Prior to FY83, the Army used a 2.4 "manning factor" to determine inventory shortages by discipline. The "shortage disciplines" then became the basis for annual graduate school quotas. Each of the services continues to use a manning factor although it varies by service. The "2.4" was derived simply. The "2" recognizes that officers have two

specialties; the .4 allows for transit, holding and student time (THS). Table 3-2 is an example of how the manning factor was used to determine discipline shortages and the amount of deficiency for each. Appendix H contains a listing of all shortage disciplines, by priority, against which full-time graduate schooling quotas were established for FY82. The Army abandoned this system in FY83 for the following reasons:

1. Grouping of lieutenants/captains through lieutenant colonels does not allow identification of specific requirements and assets--most of the validations for a particular discipline could be at the grade of captain with assets on hand in the grade of lieutenant colonel. Lieutenant colonels, of course, do not occupy captain positions.

2. Does not correlate disciplines with officer special-ties. For example, an officer listed as an asset holding a master's in Area Studies may not hold a specialty which is supported by this discipline. Officers are managed and utilized by specialty, not academic discipline. Therefore, this officer cannot be considered an asset. One may query, why wasn't this officer designated into a specialty which correlates with his academic credentials? As previously stated, officers will have been designated their branch upon accession and their functional area by the eighth year point. Many officers acquire graduate education long after their eighth year (through off-duty programs).

3. No consideration given to inventory development of officers with graduate education.

For the FY82, fully-funded graduate education quota development, MILPERCEN adopted an inventory development method already being used to determine lieutenant accession requirements by branch and captain functional area designa-tion needs. The method used is the Future Army Requirements

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TABLE 3-2

SHORTAGE DISCIPLINE DETERMINATION, FY82

Academic Discipline	AERB Valid Positions (03-05)*	X 2.4 equals	Assets Required (03-05)*	Less Assets On-Hand (01-05)**	Less In School, FF*** (03-05)	Net (+)-- Over (-)-- Short
Area Studies	317	-	760	353	46	(-) 361
Food Tech	13	-	31	15	1	(-) 15

   * CPT-LTC
  ** 2LT-LTC
*** FF = Fully Funded

Source: MILPERCEN files, 1982

(FAR) model. FAR is based on officer continuation patterns and is linked to utilization rates, career patterns, OPMS management policy, and authorizations by specialty and grade. FAR algorithmically determines, based on AERB master's level validations by individual specialty and appropriate utilization rates[4] the number of captains to send to master's level schooling. The goal is to develop an inventory of captains which ideally will be of sufficient size to satisfy future AERB requirements, captain through colonel. Appendix I contains an example of the FAR method

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[4]The time an officer of a particular grade and specialty can be expected to serve in a validated position for his grade and specialty.
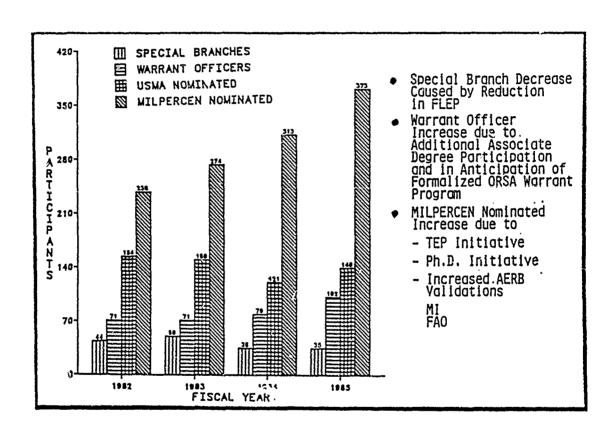
as computed for FA 53 ADPS Management based on the 1980 AERB results.

In this example, the desired utilization rates fall within tolerance. This will not be true for all specialties, especially in cases where a higher grade's validations are greater than a lower one. For example, if for FA 53, the validations for colonel were double the validations for major, a dilemma for the analyst will occur, as he will be unable to work within acceptable utilization ranges and satisfy all grades' requirements. Appendix I also contains the computer-generated FAR output used for the FY83 Fully-Funded Graduate Education Quota Plan. Seventy-five percent of all specialties are out of tolerance. Generally the analyst will optimize at the colonel's level because it represents higher level decision makers. Unfortunately, keying satisfaction on a higher grade will adversely affect the initial utilization rates for captains and majors (i.e., more graduate degrees must be produced at the grade of captain and major than can be utilized in validated positions--which will violate DOD Directive 1322.10 initial utilization policy. Furthermore, the FAR does not work for extremely low validations as in the case for doctorates (17 total Non-USMA in 1983). All doctorate validations are managed on a case-by-case basis.

Since development of the FY83 quota plan, refinement of the applicability of the FAR model continues. Instead of
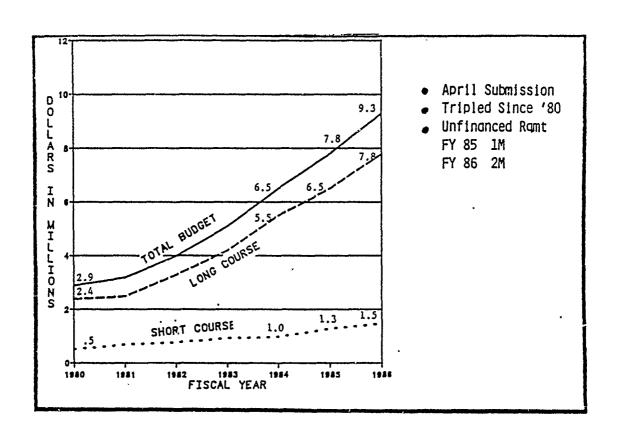
using just one set of utilization rates for all grades (.50-.85) as was done in FY83, separate rates, based on historical analysis, are now used for each grade. Figure 3-4 shows the fiscal year fully funded inputs, 1982-1985. The growth of fully-funded inputs since 1982 has been significant with a 28 percent change. Two primary reasons for this trend are the added emphasis on increasing doctoral validatio's (17 validations, non-USMA in 1983; 78 by the 1985 AERB); and the establishment in 1984 of the Technological Enrichment Program (TEP) which sends newly commissioned lieutenants to graduate school in high tech disciplines.

As inputs have significantly increased, so too has the budget. Figure 3-5 shows that the total budget 1980-1986 has tripled from $2.9 M to $9.3 M. The "long course" (fully-funded programs) has increased from $2.4M to $7.8M--a 225 percent change. "Short Course" monies (see "definition of terms") have increased at a somewhat lower rate. Another reason for the fully funded budget increases (beyond the increase of annual inputs) is due to tuition and fee cost rises (27 percent since 1980). Unanticipated cost growths required unfinanced requirements monies for FY85 and FY86 totaling $3 Million. A third cause of budget growth has been the use of more prestigious and better universities-- MIT, Stanford, Harvard, etc., at the urging of the Vice

Source: MILPERCEN files, 1985

Figure 3-4 Fully-Funded Program Inputs, 1982-1985

Source: MILPERCEN files, 1985

Figure 3-5   Army Civil Schools Budget 1980-1986

Chief of Staff of the Army and the recommendation of the PDOS. [Ref. 4:p. S-3-3]

C. PROGRAMS

The AGES is a subset of the Army Advanced Civil Schooling System (ACS). All programs are for full-time study. This includes the Fully-Funded Program (FFP)--Army pays all tuition and fees; Degree Completion Program (DCP)--graduate and undergraduate (officer pays tuition and fees); Cooperative Degree Program (COOP), DCP programs conducted in conjunction with the U.S. Army Command and General Staff College (CGSC) and the U.S. Army War College (AWC); Training With Industry (TWI); Army Degree Program for ROTC Instructor Duty (ADPRID)--a DCS program to meet ROTC requirements; Technological Enrichment Program (TEP) which sends newly commissioned lieutenants for master's degrees; and assorted scholarships, fellowships and grants. TWI and some scholarships, fellowships and grants are not degree producing.

D. SELECTION OF OFFICERS FOR FULL-TIME GRADUATE STUDY

Title 10, US Code, 1947 authorizes service secretaries to have up to eight percent of the authorized strength in civilian schooling. These constraints have never been approached. In FY85 only about .01 of the active duty Army officer corps was attending civilian schools.

As previously discussed, the target population to send to graduate school is captains between their sixth and eighth years of commissioned service, in order to develop an inventory of officers with the appropriate mix of specialties and academic disciplines in order to meet future requirements. MILPERCEN has the responsibility of managing all student inputs and outputs. Once the annual quota plan is completed, the MILPERCEN assignment divisions are responsible for identifying and nominating officers against the plan. The criterion for selection is as follows:

1. Career Timing. The officer has completed his branch qualification, Officer Advanced Course and Company Command. The latter does not apply to all branches.

2. Needs Match. The officer's desired discipline of study supports his branch and/or designated functional area; and a quota for the same exists.

3. Performance. The officer's manner of performance is of the highest quality--not a promotion risk.

4. Acceptance. The officer has been accepted by an accredited college or university, preferably one in his home state in order to receive resident tuition rates.

5. Availability. Upon completion of civil schooling, the officer will be available for an assignment to an AERB validated position.

6. Prior Graduate Work. According to DOD Directive 1322.10, priority should go to those officers who have completed the maximum number of transferrable credits. Normally the maximum number of transferable graduate credits between universities is only 14-- approximately one quarter worth.

The process for nomination varies by assignment division in MILPERCEN but the above criteria are closely followed. Generally the applicant's file is floated internally within

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each assignment division among assignment and professional development action officers for concurrence. If favorably considered, the nominated file is sent to the civilian school's action officer for final approval and notification of the individual.

The thoroughness of the selection process, according to MILPERCEN officials, has precluded any measurable number of dropouts or promotion passovers while in school.

E. INITIAL UTILIZATION OF OFFICERS

DOD Directive 1322.10 and Army Regulation 621-1, Training of Military Personnel at Civilian Institutions govern the utilization of officers with graduate degrees procured through full-time programs. The directive states: [Ref. 13:pp. 5-6]

> Officer personnel who attend graduate school under any program of 26 weeks or more are considered funded. Unless a different period is prescribed by law, they will agree in writing that, upon completion of the education, they will serve, and will be required to serve, on active duty for a period equal to three times the length of education through the first year. Additional payback for education in excess of one year will be determined by each Military Service. Payback will be evaluated annually through surveys and/or studies to insure that optimal utilization and retention is realized.

And,

> Officer personnel who have received funded graduate level education will serve:
>
> (1) One tour in a validated position as soon as practicable after completion of such education, but not later than the second tour. Particular emphasis should be placed on early assignment of technically skilled graduate personnel.

(2) · As many subsequent tours in validated positions as Service requirements and proper career development, including command assignment, will permit. A minimum of two tours is desirable.

The first paragraph refers to the "service obligation" one incurs attending full-time study for 26 weeks or more, i.e., "funded." It must be noted that the Army uses the word "funded" as in the Fully-Funded Program (FFP) to denote that the Army pays all tuition and fees (Ref. 17:p. 6]. The Degree Completion Program (DCP) on the other hand is also a "funded" program under the directive's criterion. However, officers in this program fund their own tuition and fees. [Ref. 17:p. 11] Army policy is that one incurs an obligation of three years for each year of full-time study, computed in days not to exceed six years [Ref. 17:p. 8]. This is tightly managed and few exceptions are made.

Paragraph two of the directive requires "funded" officers to serve in validated billets for one "tour"--in order to maximize initial utilization and then to be subsequently re-utilized. The Army defines a tour as three years [Ref. 17:p. 12]. Approximately six months prior to graduation, the officer receives orders from MILPERCEN assigning him to a particular command. The special instructions on the orders advise the receiving commander of his requirement to place the individual in an AERB-validated position and identifies (by unique AERB position number) the specific position. Failure by the commander to put an "AERB-obligated asset" in a validated position; or to remove

an obligated asset from a validated position without MILPERCEN authority can cause the loss of the position's validation. Since the advent of the AERB, there are no documented cased of a position losing a validation because of a commander's failure to comply.

In order to effect "payback," two hurdles must be made-- MILPERCEN placing the officer on orders to an AERB assignment, and the local commander actually placing the officer in a validated position and leaving him there for the duration of the tour.

The directive and MILPERCEN policy provides flexibility in that utilization can be deferred to the subsequent tour following completion of schooling. Such flexibility allows the Army to meet immediate operational needs; imperative career requirements of the officer (executive/operations officer time, other troop duties, etc.); compassionate requirements (joint domicile, family or medical needs, etc.); and professional schooling demands like Command and Staff College (CSC).

Prior to 1983, MILPERCEN level deferrals were negotiated at the action officer level, often verbally with little, if any, documentation. Consequently, the later identification of previously deferred officers was difficult to accomplish. In 1983, deferral requests and approvals were elevated to the division chief level (colonels) at MILPERCEN and required detailed written justification. This improvement

was facilitated by the initial implementation of the
Civilian Schools Management Information System (CSMIS).
CSMIS provided an automated means of managing and
controlling the assignments of AERB obligated assets.
Electronic "inhibit flags" are placed on each obligated
asset's file at the time they are sent to graduate school.
The inhibitor precludes the MILPERCEN assignment of an
obligated asset to a non-validated position without an
approved deferral; or the MILPERCEN assignment of an
obligated asset out of a validated position prior to
completion of a 36 month tour without an approved deferral,
e.g., curtailment. Although the advent of CSMIS and the
need for written justification at a higher managerial level
may appear bureaucratic and cumbersome, it is necessary in
order to ensure utilization under the existing DOD directive
and Army regulations.

The utilization management policies and procedures
established in 1983 did little to improve, however, the
utilization management on the local/command level. Tradi-
tionally, the field commander has had the right, inherent
with his command authority, to assign, utilize and employ
his personnel resources as he sees fit and deems necessary
in order to accomplish the unit's assigned or implied tasks
and missions. This right is inviolate. Who better under-
stands the needs of the unit better than its commander? As
a consequence, this problem continues to exist.

F. REUTILIZATION OF OFFICERS

The DOD directive suggests a minimum of two subsequent utilization tours. Although MILPERCEN has no specific management procedures to ensure reutilization, the FAR model's calculations are based on developing an inventory of graduate degree holders at the grade of captain which will be of sufficient size and mix (specialties and disciplines) to meet future AERB requirements for grades major through colonel. The grades lieutenant colonel and colonel are the ranks at which reutilization will occur. Use of the FAR should automatically force reutilization without any additional managerial procedures.

G. MANAGEMENT INFORMATION SYSTEM

The development of the Civil Schools Management Information System (CSMIS) began in 1982. Initiation of this effort was precipitated by MILPERCEN officials' realization that management of requirements (AERB-validated positions) and utilization of assets needed improvement. Manually managing approximately 5000 positions and 650 graduate degree outputs per year was impossible for a staff of less than three individuals. Considering that increasing the size of the management staff would not be favorably considered or even represent a potential solution, ADPS with the appropriate checks and generation and management of information could help solve AGES shortfalls. The scope of this thesis is not appropriate for a detailed explanation of

CSMIS, except to say that an MIS was sorely needed to assist MILPERCEN managers satisfy DOD policies, especially with regard to requirements and utilization management.

IV. A CRITIQUE OF THE CURRENT SYSTEM

A. EARLY STUDIES

Since the Civil War, the services have recognized the need for advanced civilian schooling in order to prepare officers for the increasingly complex and technological nature of the maintenance of peace and successful execution of war. Complexity is increasing rapidly within the scientific/technical, economic, geopolitical and managerial arenas.

The early years of the services' emphasis on graduate education following World War II received impetus from a series of review boards which met to study officer professional development needs. A summary of these boards' findings/recommendations are summarized below.

1. Gerow Board

This board met in 1945-46. Its primary conclusion regarding officer graduate education was that it was economically infeasible to duplicate education in military schools which could be provided through civilian colleges and universities. This recommendation is the source of the Army's validation criteria in use today. [Ref. 18:pp. 7-8]

2. Eddy Board

This board met in 1949. It established a requirement that ninety percent of Regular Army officers should

have baccalaureate degrees; and that the Army provide offi-
cers an in-service opportunity to obtain their degrees.
[Ref. 19:p. 20] This led to the "Bootstrap" program which
allowed officers to attend civil schooling full-time to
complete their bachelor degrees. This program remains in
effect today, except that the officer must now fund the
tuition and fees. The board also recommended that selected
officers be provided an opportunity to acquire graduate
degrees via full-time study. [Ref. 20:pp. 1-7]

3. Williams Board

The Williams board held in 1958, observed that offi-
cers who obtain full-time graduate education should do so
for ultimate assignment to specific positions which require
these skills. However, the board felt that graduate educa-
tion programs had a secondary, positive effect, namely the
improvement of the educational level of the officer corps,
particularly with regards to social, political, economic and
scientific areas. Justification for these programs must
include both primary and secondary benefits. The board con-
cluded that with the rise in technology, graduate education
inputs must likewise increase. [Ref. 21:pp. 52-55]

4. Haines Board

The Haines Board meeting in 1966, reached two
conclusions which address graduate education. First, the
Army must continue its reliance on civilian colleges and
universities to educate officers in disciplines which,

although not directly military oriented, have military applications and that the Army would continue to be unable to attract a sufficient number of men already possessing graduate degrees. Second, this board recognized a need to improve utilization rates, and validation procedures. A major difficulty identified in the validation process was the lack of precise standards to assist field commanders deter-mine their organization's graduate education needs. [Ref. 22:pp. 680-697]

5. DOD Officer Education Study

Also in 1966, the same month the Haines Board reported its results, the DOD Officer Education Study published its report. This study found that a better method was needed to forecast long range graduate education needs and came to a similar conclusion of the Haines Board--that subordinate commanders need more precise standards in order to identify graduate education requirements. [Ref. 23:pp. 366-367]

By 1966, there were indicators that a need for improvements in the Army Graduate Education System existed. However, it was not until 1970 that forces external to the DOD became involved in the services' management of graduate education programs. These outside agencies were the General Accounting Office (GAO), Office of Manage-ment and Budget (OMB) and Congress.

B. THE 1970'S

Although there is general consensus by the GAO, OMB and Congress that a need exists for military officers to possess postgraduate education, there has been significant criticism of how the services determine their requirements and how they utilize their assets. This concern grew from the magnitude of the programs costs estimated at $70 Million in FY69. (This includes total costs, budgetary and opportunity for all services' funded programs to meet approximately 3,000 validations. In 1969 over 4200 officers were enrolled in full-time, fully-funded programs. There were indications that both the number of validations and costs would continue to grow [Ref. 24:pp. 3-4]. Because of the program costs and future uncertainty, the GAO initiated the first external review of these programs. The purpose of the study was as follows:

> A Joint Chiefs of Staff Memorandum established criteria in 1964 for determining graduate education requirements for military officer positions. To fill these positions over 4,200 officers were enrolled during fiscal year 1969 in full-time graduate education programs at an estimated cost of at least $70 million. Because of the amount of funds being spent, the General Accounting Office (GAO) reviewed the graduate education program to see whether the positions required the extra education and whether o fi-cers' training was adequately used. [Ref. 24:p. 1]

The 1970 GAO Report directed its criticism to the following areas.

1. Criteria for Validation

The criteria for the identification of requirements was too broad and permissive. A case for validation could

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be made for practically any position. The services appeared to equate positions where graduate education was "desirable" with positions where it is "essential." "Essential," as defined in the report, are those positions where graduate education is prescribed by law (like medical doctors) or positions, the duties of which can only be performed "satisfactorily" by an incumbent with graduate education. "Desirable" criteria should only be for those positions where a degree of incumbent prestige is required or a graduate degree is necessary for optimum performance. By using the criteria of desirability, the services were greatly inflating requirements. [Ref. 24:pp. 20-21] DOD Directive 1322.10, Policies on Graduate Education for Military Officers, July 1974, continues to maintain a validation criteria policy which ensures "that officer positions are validated for graduate education where such is essential for optimum performance of duties." [Ref. 13:p. 2] In other words, general criteria used today falls within the "desirability" criteria as defined and condemned by the GAO in 1970.

2. Inconsistencies of Criteria

Criteria were not consistently applied throughout the department or even consistent within the services. Some positions of like responsibilities and duties were validated; others were not. The 1983 AERB was specifically tasked to standardize validations. As a result, 521 of 4478

total validations in 1983 were approved based upon standardization. The criteria used by this board were simply "like positions in like organizations." [Ref. 25:p. 2]

3. Consideration of Alternatives

Acceptable alternatives to full-time graduate study like work experience or short training courses were not considered were not being considered by the services. The GAO argued that alternative types of training should be considered in order to reduce costs. Furthermore, the services should make use of civilian personnel for purposes of continuity and stability. GAO found that comparable civilian positions to validated military positions did not have graduate degree requirements. The reason being that the U.S. Civil Service Commission substitutes experience for formal education. The study implied that the services should adopt a similar strategy.

4. Other Inconsistencies

Inconsistency between actual position requirements and requirements contained in the requests for validation. The validation process was not able to intercept inflated requests.

5. Malutilization

The services did a poor job of assigning officers with specialized graduate education to validated positions in order to ensure maximum benefits. The GAO investigated

703 validated positions at 14 installations. Of the 703 validated positions, only 162 or 23 percent were occupied by individuals possessing graduate degrees (see Table 4-1).

TABLE 4-1

GAO UTILIZATION FINDINGS [Ref. 24:p. 22]

Incumbent Education Level	Quantity	% Fill
- Master's Degree or higher	162	23
- Less than a Master's Degree	437	62
- Vacant	104	15
Total	703	100

The GAO comment regarding this finding was as follows:

> At the locations we visited, the under-utilization of officers with advanced degrees was accentuated by the fact that individuals with less than master's degrees occupied 437 positions and vacancies existed in 104 positions which, according to the military services, required graduate education at the same time that 344 officers with graduate degrees were assigned to other nonvalidated positions. Some of these officers with graduate degrees could reasonably be expected to satisfy the educational and grade requirements of the validated positions at the bases at which they were assigned or they could have been assigned to other bases with positions requiring graduate degrees in the pertinent academic areas. [Ref. 24:p. 22]

The DOD response to the GAO Report regarding the identification of requirements and utilization demands raised a basic question which even today has not been adequately resolved, namely, is the sole purpose of graduate education programs only to meet specific requirements or

should broader, more universal benefits also be considered?

The DOD response follows:

> While recognizing the importance of the criteria, we believe the GAO Report has overlooked a very important element in the education and training of military officers. The report does not recognize sufficiently that graduate education is more than training in a particular skill--important as that may be. Education is a continuing way of life and within the Military Services it contributes to the intellectual development of officers. Graduate education imparts to the student advanced technical knowledge. More importantly, it helps broaden his capacity for original thought and promote the development of analytical tools for problem solving.
>
> As a general observation, therefore, we believe that the draft report is too limited in its considerations of the utility of education. Of particular concern is the failure to acknowledge:
>
> (a) the rising educational aspirations of the segment of the population from which we must recruit military officers.
>
> (b) the value of graduate education in our junior officer retention efforts.
>
> (c) the increased capability which an officer with graduate level education brings to billets which he may occupy outside of the limited range of positions validated for his academic credentials. [Ref. 24:p. 32]

GAO's comment to this response was that the DOD's system of identifying graduate education needs was based on specific positions rather than a broader basis as argued in their response. GAO further argued that considering the cost of graduate schooling programs, the only valid justification for their existence is requirements based upon a criterion of "essentiality"--for satisfactory performance of duties.

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Before the 1970 GAO Report, HQDA had already taken steps to improve its utilization rates. Prior to 1970, utilization tracking had rested with each assignment branch (i.e., Infantry Assignment Branch, Quartermaster Assignment Branch, etc.). But in 1970, the management of tracking utilization was centralized under the Deputy for Career Development, Officer Personnel Directorate, Office of Personnel Operations. Furthermore, plans were initiated to develop an automated utilization tracking system[1]. Prior to this change, Army-wide statistics were not maintained [Ref. 26:p. 43]. However, Office of Personnel Operations revealed that of a sample of 2000 officers who obtained graduate degrees from 1960-1964,

> 83.9 percent received some type of utilization assignment . . . as of June 1972 of 1847 officers requiring utilization . . . 1511 (82 percent) were assigned to initial utilization positions, 299 (16 percent) were deferred . . . and 37 (2 percent) were not properly utilized. [Ref. 26:pp. 44-45]

The 1970 and 1972 figures are essentially identical. One would question whether centralized tracking was the solution. Utilization criteria, as stated in Chapter III, has two hurdles. First, the assignment by MILPERCEN of an obligated asset to a validated position; and second, the field commander actually using the asset in a validated position. In 1970 this second part to the utilization

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[1] By 1982, no such system was in place. CSMIS was designed to correct this deficiency.

equation was not even considered today remains unsolved, despite CSMIS.

DOD's reply further argued that the utilization of officers with graduate degrees in specific billets ignored other demands. These are the need to meet a large variety of requirements; and the need to professionally develop officers, not just through education and training programs, but also via rotation through a variety of assignments and experiences. GAO apparently was unimpressed. Their reply stated:

> DOD has indicated little early corrective action in response to GAO's major findings and suggestions. In view of DOD's position and the announced plans of the military services to expand the graduate education program, GAO believes that the Congress may wish to consider limiting the full-time, fully funded graduate level education program (1) to those positions for which such education is essential for the satisfactory performance of duty and (2) to only those officers who can be used primarily in those positions. [Ref. 24:p. 3]

In summary, the GAO Report of 1970 increased concern regarding DOD's management of the graduate education programs at the Secretary's level and in Congress. In 1971, the first comprehensive policy statement by the DOD was issued. This statement was DOD Directive 1322.10, Policies on Graduate Education for Military Officers, March 27, 1971. This document was the forerunner of the current directive, dated July 30, 1974. This directive contained guidance based on the 1970 GAO study. The 1971 directive established validation criteria, guidelines for utilization, and alternatives to fully-funded programs. Apparently, DOD

hoped to make graduate education more economical and lessen potential criticism regarding schooling costs. In 1971, General Westmoreland, Chief of Staff of the Army, commissioned a review to consider officer professional development needs for the 1970's. This was the Norris Board. The Norris Board analyzed graduate schooling from a pro-con standpoint. The advantages were as follows:

(1) Allows for efficient management.

(2) Increases retention of highly capable officers.

(3) Increases the educational level of the office corps thereby improving the Army's capability to deal with increasing technology.

(4) Circumvents educational obsolescence--keep the Army abreast with latest academic developments.

(5) Improves the Army's prestige.

(6) Conforms to national educational trends. [Ref. 27:pp. 7-8]

The negative aspects:

(1) Incurs high manpower and financial costs.

(2). Divides officer interests between civil schooling and professional military schooling.

(3) Promotes a "sheepskin" sweepstakes--ticket punching and careerism nature of graduate schooling.

(4) Increases political vulnerability--reference to GAO and congressional interest in DOD's graduate education programs.

(5) Increase administrative workloads--the tremendous amount of administrative work required at all echelons from the identification of requirements to the management demands associated with meeting utilization policies. [Ref. 27:pp. 8-10]

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The Norris Board concluded that despite the afore-mentioned negative aspects, the Army could ill afford to eliminate full-time funded graduate degree programs, especially when considering retention and motivation of young highly intelligent officers--that limiting one's education to only baccalaureate degrees would not satisfy officers of the 1970's; and when considering the need to maintain a technically competent Army, there was a growing need to develop officer specialists. Other conclusions were that the Army could not continue to primarily meet graduate education requirements through fully-funded programs (referring to the Army paying tuition and fees for full-time graduate students). Greater use must be made of the Degree Completion Program (DCP), the Advanced Degree Program for ROTC Instructor Duty (ADPRID), cooperative degree programs (COOP) at the Army Command and General Staff College and Army War College. The Norris Board recommended the establishment of assignment policies which would promote officer continuance of off-duty studies concurrent with their duty assignments. [Ref. 27:pp. 11-14]

In Congress, the 1970 GAO Report provided a basis for questions posed to DOD witnesses by the House Appropriations Committee during hearings concerning the 1971 budget. [Ref. 28:pp. 29-31, 190-196, 297, 386-389] Specifically, interest surrounded the selection process of officers for graduate schooling, service obligations incurred,

resignation rates of participants, validation procedures and utilization policies.

In 1972 the Deputy Assistant Secretary of Defense for Education sponsored a study to reexamine the basic philosophy of graduate education programs and access each services' compliance with the 1971 DOD directive. The study concluded that increasing budget constraints required a greater use of alternative graduate degree sources to the fully-funded programs. Additionally, the study concluded that the services need to improve in the utilization of officers with graduate degrees. [Ref. 1:p. 1-5]

Congressional hearings on the FY72 budget did not specifically address officer graduate education. The record of hearings by the House Armed Services Committee for the FY73 budget shows considerable interest, from a macro standpoint, regarding total military training and education costs. These costs exceeded $6 Billion for FY71. Their report made the following observations:

> The Committee, in its review of manpower strengths, touched upon the question of training costs. Although evidence presented to the Committee indicated that these training costs are well in excess of $6 billion annually, no witness before the Committee was capable of providing precise cost estimates.
>
> In view of these circumstances, and since the training cost figures provided the Committee probably do not reflect many related costs, such as travel, special allowances, facilities costs, et cetera, it is reasonable to assume that training expenditures are far in excess of $6 billion. Therefore, recognizing the huge cost of training personnel and likely abuses in this area, it is the view of the Committee that this element of the departmental budget is a very likely source of future savings.

. . . These circumstances, together with the fact that there presently exists no statutory limitation on the kind of training or the amount of training which can be provided personnel by the Armed Services concerned, demands the annual scrutiny and attention of the Congress by the responsible committees. [Ref. 29:pp. 81-82]

The concerns of the 92nd Congress regarding military and education costs led to the passage of Public Law 92-436 which states:

(1) Beginning with the fiscal year which begins July 1, 1973, and for each fiscal year thereafter, the Congress shall authorize the average military training student loads for each component of the Armed Forces. Such authorization shall not be required for unit or crew training student loads, but shall be required for student loads for the following individual training categories: recruit and specialized training; flight training; professional training in military and civilian institutions; and officer acquisition training; and no funds may be appropriated for any fiscal year beginning on or after such date for the use of training any military personnel in the aforementioned categories of any component of the Armed Forces unless the average student load of such component for such fiscal year has been authorized by law.

(2) Beginning with the fiscal year ending June 30, 1973, the Secretary of Defense shall submit to the Congress a written report not later than March 1 of each fiscal year recommending the average student load for each category of training for each component of the Armed Forces for the next three fiscal years and shall include in such report justification for and explanation of the average student loads recommended. [Ref. 30:p. 6]

In accordance with the provisions of this law, a Military Manpower Training Report was submitted to Congress as part of the FY74 DOD budget. It contained FY74 through FY76 training loads to include those for graduate education. Extensive testimony by DOD officials was given to members of the House Armed Services Committee, the House Appropriations Committee and the Senate Armed Services Committee. For the

first time, evidence exists that Congress had become highly critical of DOD graduate education programs. Whereas hearings on the FY71 budget had been primarily information gathering; and FY73 budget hearings had been critical of total training and education costs, the FY 1974 budget hearings found fault with specific aspects of the management of DOD graduate education programs. Criticism keyed on the diversity of disciplines[2]; the use of graduate education as an incentive for retention; the convergence of status associated with graduate degrees; and the extent to which taxpayers should foot the bill; and the inflationary validation process.

The House Armed Services Committee reported:

> The Committee is not convinced that all of these billets do, in fact, require the holding of advanced degrees. Nor is the Committee convinced that the incumbents need be military officers educated at government expense as opposed to civilians who have acquired their degrees prior to being employed.
>
> The Committee recognizes that there is a valid need for a well-educated officer force but rejects the concept of advanced education _per se_ as a benefit which must be available in order to attract and retain officers. [Ref. 31:pp. 5613-5614]

The House Appropriations Committee, likewise, reported:

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[2]Recall from Chapter II that positions are validated by specific discipline. Technically this means that only an officer holding a graduate degree in that specific discipline is qualified for assignment to that position. This methodology requires a larger inventory of officers with graduate degrees--the basis for this Congressional criticism.

The military services have designated 24,845 positions which require that the incumbent hold an advanced degree. . . . The Committee's review of the graduate training program raised serious questions with regard to the validity of the requirements for officers with graduate degrees, and the scope of the training program. [Ref. 32:pp. 44-45]

As a result of this criticism, a 20 percent reduction in the DOD's training load and training budget was directed by Congress. These criticisms levied by Congress must be placed in an appropriate context. By 1973, U.S. military involvement in Vietnam had been tremendously reduced. Congress realized that the military must drastically reduce its manpower and spending from a pseudo wartime footing to a peacetime one. Furthermore, Congress was dominated by a dove-oriented membership representing constituencies tired of the war, many believing the U.S. military had botched it. Also, economic news for FY74 was not good. Many economists were predicting a recession and, therefore, a serious downturn in revenues. Cost cutting was the order of the day.

In 1974, the GAO undertook a follow-up study of its 1970 report. This report acknowledged improvements were made but reiterated its discontent with the fully funded programs [Ref. 33:pp. 1-2].

In 1974, DOD Directive 1322.10, <u>Policies on Graduate Education for Military Officers</u> was revised which placed greater emphasis on alternatives to fully-funded programs.

The Office of Management and Budget (OMB) actively entered the picture in 1974, commissioning a study of officer graduate education policies and practices. Their investigation recommended elimination of the position validation process, establishment of educational standards by officer occupations and periodic reviews by oversight panels [Ref. 1:p. vii].

In 1977, at the direction of the CSA, a study of Army officer professional development was conducted. The study, a Review of Education and Training for Officers (RETO) found that the Army's graduate education system, specifically utilization policies under which the Army operates, are untenable. The policy of payback measured solely by utilization in exact positions has "defined ourselves into a position of appearing to be poor mangers." [Ref. 34:p. 184]

From 1974 to 1978, Congressional criticism continued. The House Appropriation Committee (HAC) in 1978 (for FY79 budget) excerpted the HAC report for FY76. The FY76 report stated:

> The data available to the Committee indicates that a large portion of the graduate education program is not really essential to the military services. The nature of the validation process is extremely subjective and provides an opportunity for local unit bases or installation commanders to request a graduate trained officer for "maximum effectiveness" while at the same time increasing the prestige of the incumbent. In some respects graduate education has become just another ingredient in a successful officer career even though in many cases it cannot be shown that this additional training is necessary.

Most military officers, because of the forced retirement system, must seek a second career. Certainly, graduate education is an exceptionally good way to prepare for that second career. As the panel of the National Academy of Public Administration says, 'while officers, like other Americans, may make too much of a degree as a convenient, portable, and salable credential, the services should distinguish the level of education which is necessary for military effectiveness from that which enhances the officer's personal satisfaction.'

It is obvious from the discussion above that the Committee does not support the current validation process. . . . The point must be made that a master's degree is just an indication of civilian educational attainment and may or may not have relevance to the needs of the military services. Officers must be judged on their ability to perform as professional military men, and that portion of the training and education which goes into making a professional soldier must be included in the equation. [Ref. 35:pp. 28-29]

The 1978 HAC also specifically criticized the services' use of manning factors[3] with regard to inventory development. For example, Army data provided the HAC indicated an inventory requirement of 2209 personnel with graduate degrees in social disciplines, with an existing inventory of 5833 officers with social graduate degrees[4]. Yet between fiscal years 1977 through 1979, the Army sent 169 individuals per year to graduate schools in the social sciences. The other services were similarly cited. [Ref. 36:p. 25].) Furthermore, the report cited the fact that

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[3] The Army and Marine Corps used a factor of 2.4; Air Force, 1.3; and the Navy, 1.2 to 2.0 depending upon the grade and position designations.

[4] See Chapter II for discussion of problems associated with Army use of manning factors. The 5833 inventory may represent primarily senior grade officers whereas the inventory requirement of 2209 may be based on validations at the more junior grades (captain and major).

since 1970 the average strength of military officers had declined 33% while validations declined by only 28%. [Ref. 36:p. 25] Obviously, the HAC believed the services' education requirements were overstated and inflated. As a result of the above, the HAC recommended a ten percent budget reduction and directed the DOD respond to the following HAC recommendations by December 1978:

(1) Review the validation process with a view toward significant reductions. Consideration should be given to replacement of the validation process with a system of specific educational objectives for officers of like career designation which is divorced from the artificial degree requirement currently in use.

(2) Reassess the necessity for operating both the Naval Postgraduate School and the Air Force Institute of Technology. If an analysis of both operational and economic considerations dictates continued operation of one or both management controls should be established to insure that proper utilization of these educational institutions is made by all services prior to reliance on civilian institutions. Any reduction deemed necessary from the budgeted program for the Naval Postgraduate School and the Air Force Institute of Technology are not to be made prior to submission of the requested plan.

(3) Increase the use of permanent civilian faculties with advanced degrees at the service schools and academies. This would reduce the requirement for military officers to obtain advanced degrees simply to be qualified to teach and where the possibility of reutilization of the required skill is remote.

(4) In conjunction with establishing a system of specific educational objectives for individual officers, implement a system of priorities for the use of tuition assistance funds for education and training in specific shortage areas. [Ref. 36:p. 29]

In order to study and respond to the HAC recommendations, the Office of the Assistant Secretary of Defense (OASD) formed a full-time study group in late 1978 composed of representatives from each service, with its report forwarded to the HAC in January 1979 (with approved suspense

extension). The only issue of the four HAC recommendations
which is applicable to the scope of this thesis is recommen-
dation 1, concerning the validation process. DOD officials
stated:

> Because the majority of military officers come from back-
> grounds like those of civilian business leaders, both
> groups can be expected to share many common values,
> including their aspirations for education. . . . In
> short, the DOD graduate education program can be more
> fully understood in light of trends and developments in
> the larger society." [Ref. 37:p. 1 of Encl. 2]

These trends indicated a four-fold percentage increase in
the graduate education levels of major corporations' chief
executives in the previous 25 years; that between one-third
to one-half of high level executives have graduate degrees;
and that the number of graduate degrees among the civilian
sector is expected to continue to rise, especially in
business and management. [Ref. 37:pp. 3-5] Additionally,
the "short life" of graduate education dictates continuance
of annual schooling inputs. With regard to validation
procedures, the report notes that the number of validations
has been decreasing as the services become more technical.
[Ref. 37:p. II-2] The report's conclusions and recommenda-
tions (draft) are contained in Appendix J. As of 1984, none
of the OASD recommendations were in operation within the
Department of the Army. Specifically there were no
prioritization of positions; no differential manning factors

by grade and specialty[5]; and no inventory review of officers with usable and non-usable degrees was accomplished until 1983 as part of the development of the Army CSMIS Asset File.

Unfortunately, the OASD response did not capitalize on an opportunity to revamp the validation and utilization system. HAC recommendation 1 suggested that the services establish graduate education objectives by career field (e.g., for the Army, branch and functional area) and then presumably educate the appropriate number in accordance with recommendation 4. One could also reasonably presume from the HAC recommendations that payback utilization credit could be measured more broadly--when the officer is assigned to a position requiring his grade and the specialty his graduate degree supports. This system would have been much more manageable. One can only surmise as to why the services did not capitalize on this opportunity because more criticism was soon to come.

C. THE 1980'S

The aforementioned criticism came in the form of a DOD, Office of the Inspector General audit of the services management of their graduate education programs. The audit was conducted from June 1982 through April 1983. Its

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[5]Manning factors were discontinued by the Army for FY83. No differentiation by grade and specialty was used by the Army up to the point of method discontinuance.

purpose was "to determine whether the services' requirements for and utilization of officers with graduate degrees supported the amount of graduate education funded by the DOD . . ." [Ref. 38:p. i]. The general findings indicated that for all services, 437 of 749 (58 percent) officers sampled who had completed full-time graduate education in 1981 were not assigned to first tour validated positions (as required by DOD Directive 1322.10). The Army failed to assign 37 of 110 (34 percent) graduates to validated positions. No records were available indicating approved deferrals for 30 of the 37[6]. [Ref. 38:p. 4] The 34 percent non-utilization rate (i.e., 66 percent utilization rate) compares unfavorably to previously Army reported rates as indicated in Table 4-2. The reason for this discrepancy is not clear except that the Army figures, 1975-1980, were manually derived and, therefore, subject to error. The audit figures, on the other hand, are the result of samples individually investigated at the unit/installation level. Other audit findings, not applicable to the scope of this thesis, are as follows:

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[6]Army utilization rates included only that percentage of officers placed on MILPERCEN assignment orders to validated positions--does not include data regarding the percentage of officers who were actually utilized for a three-year tour in validated positions. This data, as of October 1986, is not available according to MILPERCEN officials because it is not yet programmed into CSMIS.

TABLE 4-2

FIRST TOUR UTILIZATION RATES, US ARMY (PERCENTAGE)[7]

Year	Percentage
1975	97.6
1976	94.5
1977	92.4
1978	85.3
1979	84.8
1980	85.3

Source: MILPERCEN files, 1981

- effectively and efficiently utilize officers who received graduate education,

- include many officers who had graduate degrees in their graduate education program requirements computations, and

- maintain documented justifications to support many positions recorded as validated in their mechanized manpower data systems. [Ref. 28:p. i]

It should be noted that the audit recognized the potential of CSMIS in improving the Army's management of its graduate education system.

The adverse findings of the DOD IG audit resulted in a reduction of $13.293 Million for all services' graduate education programs in the DOD Appropriation Bill, 1986. The Army was "penalized" $4.708 Million. The Senate

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[7]As stated in Chapter III, the MILPERCEN level deferral process was significantly tightened in 1983 and this fact was noted in the Army reply to the audit.

Appropriations Committee justified the reductions by stating:

A recent Defense Inspector General report cited serious problems with the way professional education requirements are determined. It also questioned whether the services effectively use officers who receive Government funded graduate education. The report had different criticisms for each of the services, but noted abuses by each.

The Committee is concerned the validation of requirements has not been carefully assessed by each service and that those trained are not being utilized properly. Considering the large sums of money which are expended annually and the questions raised by the Inspector General, the Committee believes a reduction is appropriate in fiscal year 1986 for the operating funds which support professional education programs. The Committee expects the Defense Department to review its professional education policies in view of the criticism expressed by the inspector general. [Ref. 39:p. 45]

The Army shortfall of this magnitude, according to the MILPERCEN program budget manager in December 1985, would lead to a termination of new graduate schooling starts for FY86 and jeopardize continued funding for the previous year (FY85) starts. Army leadership was able to internally obtain the required funding to continue previous and programmed new starts for FY86.

The findings of the DOD IG Audit were not an anomaly. Research of historical utilization rates of Army officer graduates of the Florida Institute of Technology (FIT) indicate similar low utilization rates. Between 1975 and 1979, only 40.9 percent of master's level graduates of the Contract and Acquisition Management were assigned to any contract/acquisition positions. [Ref. 40:pp. 13-14] The

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above data does not pertain to assignments to AERB-validated positions. If it did, the utilization rates would be even lower as the procurement/contract validated positions are a subset of all such positions.

The Army (and the other services, as well) preferred to report utilization rates in terms of centralized assignments to organizations with validated positions, as indicated in Table 4-2 vice the more accurate measurement of actual occupation rates in validated positions. The DOD IG Audit and the Dopson and Jaggers study indicates that actual utilization (which the DOD directive mandates) was lower than the Army was reporting.

Congressional action on the FY86 DOD budget, based on the DOD IG Audit indicates that legislators are prepared to turn the screw in order to force the services to improve management of their graduate education programs.

The final applicable review of officer graduate education to be considered is the Professional Development of Officers Study (PDOS)[8], often referred to as the Bagnal Study in reference to its director, LTG Charles W. Bagnal. The study was commissioned in May 1984 by the Chief of Staff of the Army:

> to reexamine all aspects of the officer's professional development system as it has evolved since the 1978 Review of Education and Training for Officers (RETO) study, and to project the applicability of that system and our recommendations out to the year 2025. [Ref. 4:p. 1]

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[8]The author was a member of this study.

The study looked into all aspects of officer profession-
al development including the Army Graduate Education System.
This study found several major shortcomings with the
identification of requirements. First, the process (AERB)
is faulty in that it does not meet its objective of
identifying total requirements. Determination of need
solely by a position-by-position review cannot identify all
requirements at the master's degree level. Second, incon-
sistencies exist. Some organizations have large numbers of
validations, others don't have any. Likewise, some
organizations which have had many validations approved by
one board will not submit for revalidation for the next
board. And there are organizations with positions of equal
or near equal task difficulty and significance in which only
some of the positions are submitted for validation. These
inconsistencies can generally be traced to the philosophy of
the commander/director and/or the position incumbent; the
reluctance of unit personnel managers to submit positions
for validation because of the special management
requirements for validated positions; and the reality that
the AERB is a reactive process--only positions authorized on
TAADS are eligible for validation consideration and specific
future requirements cannot be identified. [Ref. 4:pp. S-1
to S-5-2]

Third, recognition of the general cognitive benefits of graduate level education are not considered in the validation process.

Finally, PDOS found that graduate education goals must be reestablished. The last published goal was in 1972 for 20 percent of the officer corps to have graduate degrees. By 1984, 28 percent had advanced degrees (OPMD managed officers only, O1-O6). [Ref. 4:pp. S-2-1 to S-6-1]

Based on the above findings, PDOS made the following corrective recommendations[9]: [Ref. 4:pp. S-1-1 to S-6-1]

(1) Identify requirements based on organization, echelon, mission and impact of work; and individual positions. Assign obligated assets to validated organizations for utilization payback.

(2) Identify future requirements with assistance from MACOM's, the Army Science Board and the Army Research Institute.

(3) Establish annual graduate education goals by special-ties and grades. (Ibid, pp. S-1-1 to S-6-1.)

D. CONCLUSIONS

Two common threads of criticism pervade the numerous military and Congressional reviews of the Army's Graduate Education System. These are the process by which the Army identifies and justifies the need for offices with graduate education and the utilization of officers with graduate degrees obtained through full-time schooling programs. Is the problem that the Army disregards or disdains

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[9]Other findings and recommendations were made, but are outside the scope of this thesis.

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Congressional concern? Of course not. Or, does the Army scorn the findings and recommendations of its own commissioned reviews? Again, no. Perhaps the crux of the problem, for the Army, is program mismanagement. Or perhaps the problem is an incongruity between the underlying philosophy of how requirements are identified and how officers are utilized within the Army's system for developing and managing its officer corps, as a group and individually.

Considering the first issue, mismanagement, MILPERCEN has implemented the CSMIS and tightened obligated asset assign-ment procedures. Both have significantly improved managerial capability although continual improvements are needed. Furthermore, MILPERCEN is composed of the brightest and best officers in the Army. Its officers have a record of outstanding managerial leadership and technical abilities. Assignment there involves a stringent nominative process. The AGES is managed as well as can be expected-- within the constraints of how officers are managed, developed and utilized within OPMS. Therefore this is not the problem. The problem is one of outdated policies being applied to a new environment. The position-by-position validation process coupled with a narrow definition of utilization as contained in the DOD Directive is too constricting for the way Army officers are developed, managed and utilized. Current DOD policies recognize only

the specific functional benefits of graduate education when there are significant cognitive benefits to be gained as well. Many benefits of graduate education, regardless of the discipline of study, have universal application throughout the Army to include non-validated positions. It is important to understand that current DOD graduate education policies were published in 1974 and were based on an environment and concepts of the 1960's and early 1970's-- a time when master's degrees were held by a small minority within the civilian community; and graduate education was less universally recognized by the officers corps as necessary to perform well (see PDOS Survey results, Appendix C).

To further elucidate, the general problem stated above, the following sub-issues are discussed.

1. **System Management**

MILPERCEN is responsible for macro personnel management. It manages manpower resources. It assigns officers to field commands and installations. It is at these lower echelons where micro personnel management occurs--the assignment of officers to individual positions and the transfer of officers to other individual positions within the command or installation at the discretion of the local commander. Intra-command/installation personnel transfers have traditionally been and strongly remain the prerogative of the local commander. This is because no one but the

local commander is in a better position to determine where and how best to use his personnel resources. He has never had to request permission regarding the decisions he makes. Traditionally, he operates with a great deal of autonomy--a necessity in order to implement and enforce the age-old adage, "the commander is responsible for everything his people do or fail to do." If authority is shared (for example, MILPERCEN approval of his intracommand personnel decisions), then so, too, must be the responsibility for the successes or failures of his organization. No echelon above that of the responsible commander is willing to assume this. In short, in order to effect AERB utilization, MILPERCEN is tasked to perform micro personnel management at a macro management level; and field commanders are tasked to consider macro-management issues in making micro-management personnel decisions.

2. Reactive System

Because of the reactive nature of the validation process, no capability exists to accommodate position changes or readjustment of the local commanders' need. Or to forecast and proactively anticipate future educational needs of new technologies.

3. Officer Reassignments

Officers rarely spend three years in the same position. Those that do often are astigmatized as being a person of lower caliber abilities--no one else wants him.

Therefore, officers during a three year tour will hold at least two jobs, often three. Job rotation enhances one's professional development through exposure to a variety of experiences within either or both of one's specialties.

4. Position-By-Position Validation

A position-by-position identification process can never identify total requirements. It requires a "yes" or "no" answer based on a combination of a brief job description and justification (the request for validation) and the judgment and opinion of board members. (Note: Not all board members viewed and voted on each request during the 1983 AERB.) If a position-by-position validation process identified total Army requirements, the number of validated positions would be commensurate with the number of officers who feel graduate education is necessary for proficiency in one of their specialties--6o.5 percent (see Appendix C). This would equate to about 60,000 validated positions.

5. Submission of Request Is Major Predictor for Validation

The predictor for determining whether a position will be validated is the submission of a request for validation--a .97 validation rate (Army Educational Requirements Board Proceedings, 1983). A bias exists to validate--a fact recognized by Congressional hearings.

6. Inconsistent Validations

Some positions are validated which should not be. Likewise, there are positions worthy of validation but are

not (generally because no request for validation was submitted.) The former situation exists because of the approval bias of the board. The latter exists, in part, because of the "nominative assignment" process available to certain organizations. Higher echelon organizations, like HQDA, have the right to select and reject officers for assignment to the organization. Usually criteria for selection are based on an officer's previous manner of performance and civilian and military education levels. If one of those criteria is a master's degree, MILPERCEN makes the necessary assignment regardless of whether the officer is an obligated asset or the position is validated. When higher headquarters beckons, subordinates obey. For this reason, there is a tendency for higher echelon organizations, especially those who enjoy nominative assignment authority to not need to work within the validation process. Additionally, other inconsistencies exist. For example, approximately 1800 ROTC instructor positions exist (grades 03-06) where the college or university requires military instructors to have at least a master's degree. These requirements are neither validated nor accounted for in the annual full-time schooling quota development. Often the meeting of a ROTC instructor assignment causes a validated position to not be filled. This difficulty leads to the next shortcoming of the current system.

7. Extraordinary Management Procedures

Validated positions within the organization require field personnel managers to submit special personnel requisitions and then ensure that available obligated assets occupy these positions--or be prepared to defend why not during inspections (use of obligated assets and validated position management are items of inspector general--IG interest and, therefore, inspected). For some commanders,[10] having validated positions is not worth the effort or trouble.

8. Multiple Criteria

Graduate education is not the only criterion on which officers are assigned and utilized. There are specific considerations given to one's specialties, grade, experience, professional development needs and military education level. To design a system to meet graduate education criterion only, at the expense of any or all of the other criteria, could not only damage the operation of the Army, but the individual officer's career, as well.

9. Historical Inconsistencies

As stated previously, validations within some organizations are inconsistent from one board to the next, depending usually upon the interest of the unit's commander. This problem was identified in 1984 by the Commanding General, Army Material Command (AMC). Of course, this

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[10]Author interviews.

inconsistency causes tremendous continuity problems for MILPERCEN managers, especially with regard to inventory development.

10. Timing

Once a position is validated, it can take upwards of three years to receive an asset, especially for the doctoral level. Three years provides time for identifying an officer for schooling, school acceptance and schooling. Furthermore, commanders are reluctant to move incumbents, who do not possess the graduate education prerequisites, out of validated positions. Graduate education is not an exclusive guarantor of success. Often the "unqualified" incumbent is handling the position duties exceedingly well and was doing so prior to the position's validation. Vacancy timing can cause considerable problems for MILPERCEN managers. Often appropriate assignments for obligated assets cannot be found. This causes excessive deferrals.

11. Translation of Requirements Into Annual Quotas

Hand-in-hand with the validation and utilization processes is the translation of requirements into an appropriate inventory of officers with the right mix of grades, specialties and disciplines to be utilized against the requirements. As discussed in Chapter III, the Army uses utilization rates between .40 and .85 in computing the inventory size per specialty.[11] A utilization rate of .50

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[11]Future Army Requirements (FAR) model.

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means there will be two officers per position, or, conversely, one officer will serve half the time in a particular position (serve half his assignments in one of his specialties—or, more specifically, half his assignments in a validated position for his specialty and grade). A utilization rate of 1.00 would mean developing one officer per validated position. If captains were developed at or near a utilization rate of 1.00, initial utilization at the grades of captain and major would be assured. The tradeoff, unfortunately, would be a disastrous shortfall in the inventory, once it has aged, to meet lieutenant colonel and colonel validated requirements. This shortfall would eventually affect the general officer inventory. The alternatives, therefore, available to MILPERCEN managers are to either develop the number of captains to continuously meet captain and major validations and thus satisfy critics; or develop an inventory of captains which, as it ages, will perhaps over-prescribe at the junior grades but, more importantly, they will just meet senior grade demands. This is the dichotomy the Army faces today: Meet DOD directive policies or do what is right for the Army.

12. <u>Functional Orientation</u>

The current AGES is based solely on individual position functional requirements. No recognition is given to the overall cognitive benefits of graduate education—the

ability to think, plan, develop alternatives, solve problems and make the best decisions.

Considering recent Congressional budget slashing of graduate education monies due to what legislators consider program abuses, a change must be made to the philosophical basis of officer graduate education--its purpose and benefits. The next chapter considers several alternatives.

V. CRITERIA AND RECOMMENDATIONS

The purpose of this thesis is to not only identify Army
Graduate Education System (AGES) shortcomings but more
importantly to establish an appropriate alternative to the
current system. It has been determined that the Army must
continue to rely on civilian graduate education in order to
deal with the complexities of a modern technological
environment. Since 1970 internal and external reviews of
DOD graduate policies and practices have found numerous
shortcomings (Chapter IV). Since 1971 the Congress has
reduced the services' graduate schooling budgets on three
occasions claiming program mismanagement. In 1978, the
House Appropriations Committee, presumably recognizing that
mismanagement was not the issue, recommended a

> Review of the validation process . . . consideration
> should be given to replacement of the validation process
> with a system of specific educational objectives for
> officers of like career designations which is divorced
> from the artificial degree requirement currently in use.
> [Ref. 36:p. 29]

Although the issue was opened to change the current system,
DOD did not capitalize on this opportunity, instead hoping
to improve the existing system.

Before one can determine what changes to make, it is
necessary to first establish criteria against which a new
system must be measured.

A. CRITERIA

The following criteria were developed based on the shortcomings of the current AGES, and the professional development needs of the officer corps. Army graduate education programs must perform the following functions.

1. Contribute to the Overall Educational Level of the Officer Corps and the Professional Development of the Individual Officer

Army officers are professionally developed through the following means[1]: Military schooling, military experience, self-study/development, and civil schooling. The failure to capitalize on any of these four cornerstones, is detrimental to the individual officer and the Army as a whole. Furthermore, graduate education programs, especially those which are full-time, must benefit the officer throughout his career. In other words, graduate degrees are not merely to prepare one for a follow-on assignment.

2. Recognize that a Master's Degree Level Education is a Requisite for Certain Grades and Specialties

The Foreign Area Officer (FAO) proponent (FA48) believes that a graduate degree in a FAO oriented academic discipline is required in order to be a fully qualified FAO. Likewise, Engineer Corps officers need graduate education in engineering disciplines in order to reach their fullest potential.

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[1]Mentoring should be a foundation of professional development (according to the Professional Development of Officer Study, 1984), however it is rarely used in the U.S. Army.

3. <u>Balance Cognitive and Functional Needs</u>

Current Army validation practices emphasize functional requirements. No position was validated by the 1983 AERB based on a position's cognitive demands--total emphasis was on needed skills within a certain specialty. No regard is given under the current system for the development of both "cognitive equipment"--skills, knowledge, values, etc., which are functionally oriented; and "cognitive power" which is the innate mental force one possesses--the potential of which can be theoretically maximized through vigorous educational experiences[2].

4. <u>Identify Future Graduate Education Requirements</u>

This is a criterion in which the AERB falls grossly short. The AERB can only react to existing needs. If the need is unique, as for a new high tech discipline, it can take upwards of three years to produce a qualified officer. For example, in the early 1980's the Army severely lacked qualified military personnel in the artificial intelligence field. A method to proactively anticipate requirements is a necessity.

5. <u>Identify Total Requirements and Educate Officers Within Current Manpower and Budget Levels</u>

Although an explicit goal of the AERB process is to identify total Army graduate education requirements,

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[2]Interviews with Elliott Jacques, T.O. Jacobs, Major Larry Boyce and Jim McGuire, Army Research Institute, Alexandria, Virginia; October 3, 1986.

sufficient evidence exists showing that a position-by-position validation process cannot and has not sufficiently identified the Army's entire need. If the total Army requirement was established it would probably be in the neighborhood of 70-80[3] percent of the officer corps needing graduate education vice the current level of about 50 percent. Meeting this increased demand cannot be met by significantly increasing inputs to full-time program levels. This is especially true considering Gramm-Rudman constraints and the Army's goal of manning two additional divisions within current manpower levels. A strategy must be developed which is

> most efficient (maximizes the attainment of the objective with the given resources) or economical (minimizes the cost of achieving the objective)--the strategy which is most efficient also being the most economical. [Ref. 41:p. 3]

The alternatives, therefore, must lie in off-duty degree sources--Tuition Assistance Program, Cooperative Degree Programs (COOP), etc. The scope of this thesis does not permit a thorough discussion of these alternatives, except to say that alternatives to full-time programs must be pursued.

6. Reduce Administrative and Managerial Costs

The current AGES is noted for its tremendous administrative and management costs associated with the

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[3]See Professional Development of Officers (PDOS) Survey results, Appendix C.

validation of individual positions via the AERB and then the extraordinary management requirements at MILPERCEN and the local levels. The identification of requirements and system management must be streamlined.

7. <u>Recognizes the Autonomy of Installations and Subordinate Commanders</u>

This recognition would allow them to make appropriate personnel decisions applicable to all their officers to include those having just completed a full-time graduate program. The failures of the current system to operate within this criteria is well documented, and a major cause for shortfalls is utilization rates of obligated assets. In short, this criterion states that those in the best position to make micro personnel decisions (assignment of officers to individual positions) be left to those most capable of doing so--the field commanders.

8. <u>Operate Within Political Limits</u>

Considering the myriad of Congressional and OMB criticism of the 1970's and as recent as 1985 directed at the AGES (and the other services' programs, as well), neither current DOD policies on funded programs nor the services' execution thereof, remain politically feasible or advisable.

B. RECOMMENDATIONS

An analysis of the shortcomings of the current AGES leads one to two universally deficient aspects of the system. These are the process by which requirements are

identified; and the constraints under which utilization is narrowly measured not being in the best interest of the Army or the individual. Recommended changes are as follows:

1. Requirements Identification

In crder to identify the Army's total requirements, a two-dimensional process vice the current one-dimensional one is necessary. These dimensions include the following factors.

a. Establish Specific Graduate Education Goals

Proponents should set master's and doctoral goals by specialty and grade (captain through colonel, OPMD managed officers). Army proponents are the most knowledgeable agencies of officer professional development needs. Each proponent's input should be staffed through the U.S. Army Training and Doctrine Command (TRADOC), MILPERCEN, and Director of Training (DOT-ODCSOPS). Proponents' input may include specific academic discipline and/or master's and doctoral requirements necessary to meet any organization's extraordinary or special needs. Because of the narrow nature of doctoral level education, the bulk of these requirements may be best individually stated. The DCSPER will be the approving authority.

b. Establish a HQDA Graduate Education Board

This board will be under the auspices of the DCSPER. It will be composed of select civilian and military educators (U.S. Military Academy/Army War College/Army

Command and General Staff College/TRADOC) representing the humanities, business/management, engineering, physical sciences, and social fields of study. It should also include representatives from the civilian business, managerial and science community (i.e., corporation CEO's, Rand Corporation executives, etc.). Finally, the board should include military experts who can address Army and Defense doctrinal requirements (current and future). The purpose of the Graduate Education Board will be to advise the DCSPER of the future civilian education needs of the Army--developments in the civilian and military communities which will have a bearing, near and far term, upon the Army. The board should establish macro and micro plans and strategies regarding officer graduate education. The board should meet annually to review the status of or need to adjust established plans and strategies. This board's recommendations should be reported to the CSA for approval.

2. <u>Utilization</u>

As previously stated, requirements validation and utilization of officers are not independent. Therefore, changes in one must have a corresponding and amenable change in the other. Utilization policies should be changed as follows.

a. MILPERCEN Make Assignments to Organizations

Officers with graduate degrees fall within two categories: Those whose academic discipline of study

supports one or both of their specialties[4]; and those whose discipline supports neither. Officers with degrees that support their specialt(ies) possess the greatest utility potential for the Army and the organizations to which they are assigned. These individuals should be assigned by MILPERCEN to organizations with the greatest priority. Priority should be based on the organization's mission, echelon, and impact of decisions made by the organization upon the Army, as a whole. For example, the staff work of a major working in the Office of the Comptroller, HQDA leads to decisions of more import and impact than does the staff work of a major in an installation comptroller position. The impact of decisions made at HQDA have the potential for Army-wide affect; decisions at the installation level rarely impact beyond its gates.

The Army has a system in operation which could be adopted to identify a priority of need by organization. The system is the Officer Distribution Plan (ODP). The ODP is MILPERCEN's means to equitably distribute the officer corps, by specialty and grade, within an environment where officer authorizations (i.e., positions) exceed Congressionally set officer inventory limits. Based on the aforementioned criteria (echelon, impact of work, etc.), a level of fill is established for each Army organization. Some are at "100 percent ODP"; others 90 percent, 80

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[4]Often called "usable" degrees.

percent, and so on. A similar distribution plan should be used for distributing officers with "usable" graduate degrees. The category of officers with non-supportive graduate degrees should be distributed as any other officer.

The distribution of officers with "usable" degrees by a special distribution plan may give the appearance of "have" and "have not" Army organizations. Under this system, the disparity should be no greater than that which results from the current ODP process. Furthermore, officers with usable degrees will not spend their entire careers in higher priority organizations (like HQDA). They will continue to alternate assignments in their two specialties, one of which may not be directly supported by their degree; and officers will continue to need a variety of experiences as part of their professional development--experiences perhaps in organizations with a lower ODP--battalions, brigades, divisions, corps, schools (as instructors), etc.

b. Field Commanders Make Assignments to Individual Positions

Local commanders, who are in the best position to make individual duty assignments, would assign their officers to duties where the units' need is greatest--to positions appropriate for the individual's grade and specialties; and to duties best for the individual. This would allow a negotiation process to exist between the officer and his commander or supervisor. Under the present

AGES, neither the commander, supervisor or individual on an AERB utilization tour can negotiate position.[5] It may be noted that officers not on utilization tours can and do negotiated position assignments with their commanders and supervisors.

c. Other Recommendations

The following recommendations fall outside the specific scope of this thesis, however, they are worthy either of adoption or further study. These include the following factors.

(1) Adjust FAR Utilization Rates. Currently MILPERCEN uses utilization rates by grade between .5-.85.[6] Consideration should be given to adjusting these rates to correspond to historical rates by grade and specific specialty. Some branches and functional areas are over and under subscribed (engineer branch is traditionally undersubscribed--too few in the inventory). This adjustment could produce a more accurate inventory size.

(2) Establish Better Communication Between Congress and DOD Regarding Officer Graduate Education. Since 1971, a common thread of criticism has been that because of an inflated validation process, requirements are

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[5]Except that the commander can request from MILPERCEN authority to defer an officer being placed in an AERB validated position.

[6]See Chapter III and Appendix I for explanation of the FAR model use in establishing annual master's degree full-time inputs.

over-stated. However, evidence exists to the contrary.[7] The aforementioned recommendations will increase graduate education requirements substantially. However, this does not mean the Army must make a corresponding increase to annual full-time schooling inputs. Studies must be conducted to determine the right number of full-time inputs considering alternative competing demands for personnel and money--the operational account must be manned and funded, too. Not every graduate education requirement ("goal," under this new system) can be met through full-time programs.

(3) <u>Provide More Opportunities for Off-Duty Graduate Education</u>. The following are potential ideas for expanding graduate education opportunities.

- Establish a mechanism whereby more graduate credits can be transferred from one university to another--this would require some method of mutual recognition.

- Coordinate with universities to establish more extension schools with a greater variety of discipline on or adjacent to military installations.

- Coordinate with local universities the establishment of work-study graduate programs like the one started at Ft. Leavenworth in cooperation with the University of Kansas. Permanent party staff members are able to acquire graduate degrees in operations research/systems analysis tailored to their duty requirements. Written projects have military application, often to their duty assignment. Classes meet during off and on-duty hours. During a three year tour one can acquire a master of science. Similar programs could be established at Ft. Huachuca for intelligence and signal officers in conjunction with the University of Arizona. Contacts with university officials reveal a willingness to

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[7]See PDOS Officer Survey results, Appendix C.

establish programs in disciplines which support signal and intelligence duties.[8]

C. SUMMARY

The recommended aforementined changes to AGES represent more than just a change. Perhaps "overhaul" would be a better term. But overhaul is what is needed. These recommendations would correct current system deficiencies, meet each of the established criteria, including political feasibility. In 1978, the House Appropriations Committee recommended changes to DOD policy which are not dissimilar from the recommendations contained herein.

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[8]Information acquired by this officer during conversations with university officials in September 1984.

APPENDIX A

TRANSIT, HOLDING AND STUDENT (THS) DATA, US ARMY
(END OF MONTH AVERAGE SEP83-AUG84)

	T	H	S	Total
01/02	2886	681	1461	5028
03	1244	32	3544	4820
04	476	13	1012	1501
05	237	20	283	540
06	75	15	87	177
TOTAL	4918	761	6387	12066

Source: MILPERCEN files, 1984

APPENDIX B

THE MATHEMATICAL PROCEDURE KNOWN AS T.O.P.S.I.S.

The Technique For Order Preference by Similarity to Ideal Solution (TOPSIS) was developed in the late 1970's at Kansas State University. It is based upon the concept that the most desirable alternative of any given set of alternatives should be closest to the ideal solution and farthest from the worst-case or negative ideal solution.

TOPSIS is an appropriate rank ordering method when some N number of attributes (criteria) are used to evaluate some M number of alternatives. Weights are applied to the attributes as they will normally not have equal emphasis in the mind of the decision maker.

TOPSIS is far more robust than most other mathematical methods which allow weighting of the criteria against the alternative. The best known, simple weighted averaging, does not examine the relative strength of an alternative in two directions, i.e., both the negative ideal and positive ideal vectors.

TOPSIS assumes that each attribute can be described by a monotonically increasing or monotonically decreasing utility curve. Increasing would be used for a beneficial attribute and decreasing for a cost attribute. A decision maker's preference (the utility) can be described as increasing as the value of the attribute increases. An example would be crash worthiness in an automobile. As the crash worthiness increases, so does the preference ofthe decision maker for an alternative possessing that attribute.

The attributes inevitably represent opposing functions. More crash worthiness can be bought for a higher price. Price would be the decreasing or cost function. As price decreases, the preference of the decision maker increases.

The TOPSIS assumption of monotonic increasing or decreasing functions is practical. Most applications concerning cost, speed, safety, consistency, reliability, etc., are congruous with the assumption. Non-monotonic functinos are rare and would describe attributes whose greatest utility occurs at some value between the positive or negative ideal rather than approaching some realistic limit. Examples would be the best number of children to have, the most comfortable temperature in a room, or the

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right amount of rainfall. More is not necessarily better as neither is less necessarily worse.

Euclidean distance is used to measure the actual numerical distance of a specific alternative to the ideal solution and negative ideal solution. With N attributes, this measure is calculated in N space. For example, with 3 attributes: the Euclidean distance between two points in "three-space" is:

$$D = \sqrt{(X_2 - X_1)^2 + (Y_2 - Y_1)^2 + (Z_2 - Z_1)^2} \quad .$$

Matrix mathematics as shown in the following steps, eases the process of both the weighting and the distance calculations.

The decision matrix is:

$$D = \begin{array}{c|ccccc} & X_1 & X_2 & & X_j & & X_n \\ A_1 & x_{11} & x_{12} & \cdots & x_{1j} & \cdots & x_{1n} \\ A_2 & x_{21} & x_{22} & \cdots & x_{2j} & \cdots & x_{2n} \\ \vdots & \vdots & \vdots & & \vdots & & \vdots \\ A_i & x_{i1} & x_{i2} & \cdots & x_{ij} & \cdots & x_{in} \\ \vdots & \vdots & \vdots & & \vdots & & \vdots \\ A_m & x_{m1} & x_{m2} & \cdots & x_{mj} & \cdots & x_{mn} \end{array}$$

where:

A_i = the ith alternative

X_{iJ} = the numerical value awarded the ith alternative with respect only to the Jth criterion

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TOPSIS can be understood in six logical steps.

STEP 1.   Construct the Normalized Decision Matrix.

This step transforms the various attribute dimensions into a non-dimensional entity, i.e., a vector of unit length.   This allows more valid comparisons between attributes.   One way to accomplish this is to divide each value by the sum of squares of the values for that attribute.

$$r_{iJ} = x_{iJ} / \sqrt{\sum_{i=1}^{m} x_{iJ}^2}$$

STEP 2.   Construct the Weighted Normalized Decision Matrix

This matrix combines the decision maker's weights as derived from Annex P, into the normalized decision matrix. The computation of this matrix V, is shown below.

$$
V \quad
\begin{matrix}
v_{11} & v_{12} & \cdots & v_{1j} & \cdots & v_{1n} \\
\vdots & \vdots & & \vdots & & \vdots \\
v_{i1} & v_{i2} & \cdots & v_{ij} & \cdots & v_{in} \\
\vdots & \vdots & & \vdots & & \vdots \\
v_{m1} & v_{m2} & \cdots & v_{mj} & \cdots & v_{mn}
\end{matrix}
\quad = \quad
\begin{matrix}
w_1 r_{11} & w_2 r_{12} & \cdots & w_j r_{ij} & \cdots & w_n r_{1n} \\
\vdots & \vdots & & \vdots & & \vdots \\
w_1 r_{i1} & w_2 r_{i2} & \cdots & w_j r_{ij} & \cdots & w_n r_{in} \\
\vdots & \vdots & & \vdots & & \vdots \\
w_1 r_{1m} & w_2 r_{m2} & \cdots & w_j r_{mj} & \cdots & w_n r_{mn}
\end{matrix}
$$

STEP 3.   Determine the Ideal and Negative Ideal Solutions

Let A^* be an artificial alternative whose attribute scores are made up of the highest values awarded any alternative.

Likewise, let A^- be an artificial alternative whose attribute scores are made up of the lowest values awarded any alternative.

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$$A^* = \{(\max_i v_{ij} | j \in J), (\min_i v_{ij} | j \in J') | i = 1, 2, \ldots, m)$$

$$= \{v_1^*, v_2^*, \ldots, v_j^*, \ldots, v_n^*\}$$

$$A^- = \{(\min_i v_{ij} | j \in J), (\max_i v_{ij} | j \in J') | i - 1, 2, \ldots, m\}$$

$$= \{v_1^-, v_2^-, \ldots, v_j^-, \ldots, v_n^-\}$$

where $J = \{j = 1, 2, \ldots, n | j$ associated with benefit criteria$\}$

$J' = \{j = 1, 2, \ldots, n | j$ associated with cost criteria$\}$

Then it is certain that the two created alternatives A^* and A^- indicate the most prefereable (ideal solution) and the least prefereable alternative (negative-ideal solution), respectively.

The A^* artificial alternative represents the positive ideal solution (most preferred) but does not actually exist. The A^- alternative represents the least preferred solution and also does not actually exist.

STEP 4. Calculate the Separation Measures

The distance between the alternatives can now be measured in Euclidean distance as previously discussed.

The distance between each alternative and positive ideal is given by:

$$S_{i*} = \sqrt{\sum_{j=1}^{n} (v_{ij} - v_j)^2} \quad , \quad i = 1, 2, \ldots, m$$

The distance between each alternative and the negative ideal is given by:

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$$S_{i-} = \sqrt{\sum_{j=1}^{n} (v_{ij} - v_j)^2} \quad , \quad i = 1, 2, \ldots, m$$

STEP 5. Calculate Relative Closeness to the Ideal Solution

The relative closeness of any alternative A_i to A^* is defined as:

$$C_{i*} = S_{i-}/(S_{i*} + S_{i-}) \quad , \quad 0 < C_{i*} < 1 \quad , \quad i = 1, 2, \ldots, m$$

STEP 6. Rank the Alternatives in Preference Order

The alternatives can now be rank ordered. The preferred solution is the one with the largest TOPSIS score.

Source: MILPERCEN files (DAPC-PLS), 1986

APPENDIX C

PDOS SURVEY RESPONSES

1. Graduate education is helpful in current assignment.

	Extremely	Somewhat	Total
Doctorate	60.5%	23.6%	84.1%
Master's	41.9	40.4	82.3
All	27.0	49.0	76.0

2. Primary intent in obtaining graduate degree.

	ACS Respondents	All Respondents
Serve more effectively	28.1%	22.2%
Enhance professional intellectual growth	33.9	32.9
More competitive for selection boards	22.8	19.7
Obtain a good civilian job	7.8	5.5

3. Does/did the opportunity to acquire ACS while on active duty influence your decision to remain?

	ACS Respondents	All Respondents
Influences	59.4%	59.7%
Would stay anyway	38.4	35.8
Plan to separate	2.2	4.5

4. Officers need ACS even if the Army does not fund

	ACS Respondents	All Respondents
Agree	79.4%	70.0%

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5. Satisfaction with current duty position

	ACS Respondents	All Respondents
Very satisfied	48.4%	42.3%
Total satisfied	87.4	85.2

6. ACS is necessary for proficiency in one of my specialties

	ACS Respondents	All Respondents
Strongly agree	35.4%	30.0%
Total agree	72.6	66.5

Source: [Ref. 4:p. S-6-1]

APPENDIX D

CRITERIA FOR VALIDATION OF MILITARY POSITIONS REQUIRING ASSIGNMENT OF OFFICER PERSONNEL WITH GRADUATE LEVEL EDUCATION

a. Positions in which the primary duties of the incumbents cannot be optimally performed except by individuals possessing qualifications that normally can be acquired only through graduate level education in a relevant field of study. These positions are predominantly those in which there is a direct relationship among the primary duty to be performed, the relevant educational field, the individual's occupational specialty or sub-specialty, and the organizational function to be performed. Examples are positions requiring assignment of qualified physical, biological, and social scientists, engineers, designers, analysts, teachers, writers, counselors and statisticians.

b. Positions which must be filled by individuals who are required to exert direct technical supervision over military and/or civilian personnel who are required to possess graduate level education. These positions are exclusively supervisory and assistant supervisory in nature. There must be a general relationship among the positions, the educational field, and type of organization. Although positions will tend primarily to be in the field grades, some may be in lower grades. Generally, however, level and type of organization supervised will be of more significance than the position's grade. Examples are chiefs of laboratories, detachments, sections, branches, divisions, departments and similar organizations of a technical, analytical, developmental, research or instructional nature.

c. Positions which, for optimum effectiveness, must be filled by individuals who possess knowledge of a specific field of study to permit effective staff planning, coordination, and command advisory functions. Such knowledge would include the capability to comprehend theories, principles, terminology, processes and techniques which are necessary for effective appraisal and evaluation of complex programs.

Source: [Ref. 13:pp. 3-4]

APPENDIX E

VALIDATION CRITERIA

The following validation criteria are <u>merely guidance</u> which can be considered in evaluating a position's validation worthiness. It is not a substitute for the panel member's common sense, good judgment, and experience.

1. Is the training required available in the DOD or Army School system?

2. Characteristics of a position which require an incumbent with an advanced civilian education degree:

   a. High degree of responsibility.

   b. Accomplishment of complex/technical tasks.

   c. Echelon and impact.

3. Education at the graduate level results in:

   a. Increased depth of understanding, insight and knowledge in a field usually more specific and narrow than at the baccalaureate level.

   b. Additional understanding, insight and knowledge in supporting, related, or peripheral fields.

   c. A greater host of skills which allow the accomplishment of more complex tasks.

4. Types of education at the graduate level:

   a. Philosophical/analytical/technical.

   b. Augments materiel/leadership development.

   c. Develops entry level skills.

5. Advanced civilian education can be a substitute for experience.

6. Warrant Officer positions: Purely technical application.

a.   Baccalaureate degrees:

    (1)   By law, i.e., polygraph examiners.

    (2)   Additional understanding, insight and knowledge in a technical area.

b.   Graduate degrees: Based on high level of technical expertise--not for materiel (leadership) type duties.

Source: MILPERCEN files, 1982

CIVIL EDUCATION FOR OFFICER PERSONNEL
AT CIVILIAN INSTITUTIONS, 15 OCTOBER 1986
(Extracted from Table 1, DA Circular 621-84-1

Table 1 Academic disciplines by officer specialty*

Specialty	Academic discipline code	Discipline title
SC11		
	BAL	Operations research systems analysis (ORSA)—Business (or ORSA related discipline)
	BMS	Advanced military studies (or military arts & science)
	CHJ	Command, control and communications (C3)
	CUB	Operations research systems analysis (weapons effects)
	CUC	Operations research systems analysis (ORSA)—engineering (or ORSA related discipline)
	EPX	Psychology (or other psychology related disciplines)
SC12		
	BAL	Operations research systems analysis (ORSA)—business (or ORSA related discipline)
	BMS	Advanced military studies (or military arts & science)
	CHA	Electronic engineering
	CHJ	Command, control and communications (C3)
	CKL	Automotive engineering
	CKX	Mechanical engineering
	CUB	Operations research systems analysis (weapons effects)
	CUC	Operations research systems analysis—engineering
	CYY	Robotics
	EPX	Psychology (or other psychology related disciplines)
SC13		
	BAL	Operations research systems analysis (ORSA)—business (or ORSA related discipline)
	BMS	Advanced military studies (or military arts & science)
	CHA	Electronic engineering
	CHJ	Command, control and communications (C3)
	CKP	Guided missiles or rocketry
	CKX	Mechanical engineering
	CUB	Operations research systems analysis (weapons effects)
	CYY	Robotics
SC14		
	BAL	Operations research systems analysis (ORSA)—business (or ORSA related discipline)
	BMS	Advanced military studies (or military arts & science)
	CHJ	Command, control and communications (C3)
	CKX	Mechanical engineering
	CKP	Guided missiles or rocketry
	CUB	Operations research systems analysis (weapons effects)

* Exceptions to disciplines listed may be approved based on the need of the Army.

Table 1 Academic disciplines by officer specialty—Continued

Specialty	Academic discipline code	Discipline title
SC14 (Con't)		
	CUC	Operations research systems analysis (ORSA)—engineering (or ORSA related discipline)
	CYY	Robotics
SC15		
	BAL	Operations research systems analysis (ORSA)—business (or ORSA related discipline)
	BBL	Management aerospace
	BBS	Safety (aeronautical related)
	CFX	Aeronautical engineering
	CHJ	Command, control and communications (C3)
	CYX	Industrial engineering
	DLP	Aerodynamics
SC18		
	BBT	Telecommunications management
	BMS	Advanced military studies (or military arts & science)
	CHJ	Command, control and communications (C3)
	EBX	Area studies
	EEB	Instructional technology
	EKB	International relations
SC21		
	CCX	Civil engineer
	CGX	Engineer administration
	CUC	Operations research systems analysis (ORSA)—engineering (or ORSA related discipline)
	CXX	General engineering
SC22		
	CFY	Cartography
	DED	Topography
	DEX	Geodetic science
	DGF	Geology
SC23		
	CCP	Environmental health engineering
	CCX	Civil engineering (or related civil engineering discipline)
	CGX	Engineering administration
	CHX	Electrical engineering
	CUC	Operations research systems analysis (ORSA)—engineering (or ORSA related discipline)
	CXX	General engineering
SC25		
	BBT	Telecommunications management
	CHA	Electronics engineering
	CHJ	Command, control and communications (C3)
SC27		
	BAT**	Materiel acquisition management
	BBR**	Systems management

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Table 1 Academic disciplines by officer specialty—Continued

Specialty	Academic discipline code	Discipline title
SC27 (Con't)		
	BBT	Telecommunications management
	CHA	Electronic engineering
	CHE	Communications
	CHJ	Command, control and communications (C3)
	CHX	Electrical engineering
	CUA	Automatic data processing system engineering (or related computer science discipline)
	CUD	Computer science (artificial intelligence)
	CUX	Systems engineering
SC31		
	ECA	Police science and administration
	ECB	Corrections
	ECF	Forensic science
	ECX	Criminology
SC35		
	BAL	Operations research systems analysis—business (or any related computer science discipline)
	BAN	Automatic data processing system—business (or related computer science discipline)
	BMS	Advanced military studies
	CHJ	Command, control and communications (C3)
	CUA	Automated data processing system—engineering
	CUC	Operations research systems analysis—engineering
	EBX	Area studies
	EKB	International relations
	ERX	Political science
SC36		
	BBE	Research program management
	BCB	Strategic intelligence management
	CHA	Electronic engineering
	CHE	Communications
	CHF	Electronics warfare
	CHJ	Joint command, control and communications
	CLX	Nuclear engineering
	CUA	Automated data processing systems—engineering
	CUC	Operations research systems analysis—engineering
	DHB	Math-crytanalysis (or math related discipline)
	EBA	Strategic intelligence
	EBX	Area studies
	EEB	Instructional technology
	EKB	International relations
	ENC	Civil government
	END	Military government
	ERA	Geopolitics
	ERX	Political science

Table 1 Academic disciplines by officer specialty—Continued

Specialty	Academic discipline code	Discipline title
SC37		
	BCB	Strategic intelligence management
	CHA	Electronic engineering
	CHF	Electronics warfare
	CHJ	Command, control and communications (C3)
	CUA	Automatic data processing system engineering (or related computer science discipline)
	CUC	Operations research analysis—engineering
	CUD	Computer science (artificial intelligence)
	DHA	Statistics
SC41		
	BAO	Organizational behavior—organizational effectiveness
	BAP	Personnel management
	BBB	Personnel management administration
	BBR	Systems management
	BMS	Advanced military studies
	BPT	Manpower, personnel and training analysis
	ESX	Sociology
SC42		
	BAL	Operations research systems analysis—business
	BAN	Automatic data processing system—business
	BAP	Personnel management
	BBB	Personnel management administration
	BBR	Systems management
	BMS	Advanced military studies
	BPT	Manpower, personnel and training analysis
SC43		
	BAP	Personnel management
	BAX	Business administration
	BBA	Public administration
	BBN	Hotel restaurant management
	EFA	Recreation
SC44		
	BAA	Accounting and auditing
	BAD	Banking and financing
	BAM	Comptrollership
	BAN	Automatic data processing systems—business
	BAX	Business administration
SC45		
	BAM	Comptrollership
	BAT**	Materiel acquisition management
	BAX	Business administration (or business related discipline)
	BBR**	Systems management
	DHA	Statistics

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Table 1 Academic disciplines by officer specialty—Continued

Specialty	Academic discipline code	Discipline title
SC46		
	ADX	English
	AFA	Public speaking
	AGB	Production, motion picture
	AGC	Production, television
	AKX	Journalism
	EKD	Communications sciences
	ENX	Public relations
SC48		
	EBX	Area studies
	EKB	International relations
	ENC	Government, civil
	END	Government, military
	ERA	Geopolitics
	ERX	Political science
	ESX	Sociology (or related social science discipline)
SC49		
	BAL	Operations research systems analysis—business
	BAT**	Materiel acquisition management
	BBR**	Systems management
	CUB	Operations research systems analysis (weapons effects)
	CUC	Operations research systems analysis—engineering
	DHA	Statistics
SC51		
	BAL	Operations research system analysis—business
	BAT**	Materiel acquisition management
	BAX	Business administration management
	BBR**	Systems management
	CFX	Aeronautical engineering
	CHA	Electronic engineering
	CHX	Electrical engineering
	CKP	Guided missiles and rocketry
	CKX	Mechanical engineering
	CUC	Operations research systems analysis—engineering
	CUD	Computer science (artificial intelligence)
	CUX	Systems engineering
	CXX	Engineering
	CYX	Industrial Engineering
	CYY	Robotics
	EPB	Experimental psychology
SC52		
	BAT**	Materiel acquisition management
	BBR**	Systems management
	CLA	Nuclear effects engineering
	CLX	Nuclear engineering (or any related nuclear engineering discipline)
	CKN	Engineering, explosive
	CSX	Engineering, physics (or any physics related discipline)
	DLD	Nuclear physics

Table 1 Academic disciplines by officer specialty—Continued

Specialty	Academic discipline code	Discipline title
SC52 (Con't)		
	DLM	Physics, radiological
	DLY	Physics, laser/microwave
SC53		
	BAN	Automatic data processing system—business
	BAT**	Materiel acquisition management
	BBR**	Systems management
	CUA	Automatic data processing system engineering
	CUD	Computer science (artificial intelligence)
	CYY	Robotics
SC54		
	BPT	Manpower, personnel and training analysis
	BMS	Advanced military studies (or military arts and science)
	CHJ	Command, control and communications (C3)
	CUB	Operations research systems analysis (weapons effects)
	CUC	Operations research systems analysis—engineering
	EEB	Instructional technology
	EGX	History
	EKB	International relations
	ERX	Political science
SC55		
	PBH	Contract law
	PBI	Labor relations law
	PCS	Criminal law
	PDX	International law
SC56		
	ACA	Religious education
	ACB	Pastoral counseling
	ACC	Religious theology
	AFC	Homiletics
	ALX	Ethics
	BBM	Church management
	EAB	Cultural foundations
	EEX	Educational administration
	EPK	Educational psychology
SC71		
	BAT**	Materiel acquisition management
	BBF	Logistics management
	BBR**	Systems management
	CFX	Aeronautical engineering
SC72		
	BAT**	Materiel acquisition management
	BBF	Logistics management
	BBR**	Systems management
SC73		
	BAT**	Materiel acquisition management
	BBF	Logistics management
	BBP	Procurement and contract management
	BBR**	Systems management

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Table 1 Academic disciplines by officer specialty—Continued

Specialty	Academic discipline code	Discipline title
SC73 (Con't)		
	CKP	Guided missiles
	CUB	Operations research systems analysis—(weapons effects)
	CUC	Operations research systems analysis (ORSA)—engineering (or any related ORSA discipline)
	CUX	Systems engineering
	CYY	Robotics
SC74		
	BAT**	Materiel acquisition management
	BBK	Industrial management
	BBR**	Systems management
	CEX	Chemical engineering
	CUC	Operations research systems analysis (ORSA)—engineering or any related ORSA discipline)
	DDB	Analytical chemistry
	DDX	Chemistry (or any related chemistry discipline)
SC75		
	BAT**	Materiel acquisition management
	BBF	Logistics management
	BBK	Industrial management
	BBR**	Systems management
	CYY	Robotics
SC81		
	CRM	Energy resource management
	CRX	Petroleum engineering
SC82		
	BAN	Automatic data processing system—business
	BAS	Food distribution management
	DAF	Food technology
SC91		
	BAT**	Materiel acquisition management
	BBF	Logistics management
	BBK	Industrial management
	BBR**	Systems management
	CKX	Mechanical engineering
	CLE	Maintenance engineering (or any maintenance related discipline)
	CUC	Operations research systems analysis (ORSA)—engineering (or any related ORSA discipline)
	CYX	Industrial engineering
	CYY	Robotics
SC92		
	BAN	Automatic data processing systems (ADPS) business (or any related ADP discipline)
	BAT**	Material acquisition management
	BAX	Business management
	BBF	Logistics management
	BBP	Procurement and contract management
	BBR**	Systems management
	BMS	Advanced military studies

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Table 1 Academic disciplines by officer specialty—Continued

Specialty	Academic discipline code	Discipline title
SC92 (Con't)		
	CWX	Textile engineering
SC95		
	BBF	Logistics management
	BBG	Transportation and transport management
	CUC	Operations research systems analysis—engineering (or any related ORSA)
SC97		
	BAT**	Materiel acquisition management
	BAX	Business administration (or any business related discipline)
	BBK	Industrial management
	BBP	Procurement and contract management
	BBR**	Systems management
	CGA	Production design engineering
	CYX	Industrial engineering

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APPENDIX G

RECOMMENDED VALIDATIONS BY SPECIALTY AND GRADE

	O3	O4	O5	O6	TOTAL
11	2	11	8	2	23
12	2	7	12	0	21
13	4	5	11	3	23
14	2	20	10	1	33
15	4	15	15	3	37
21	127	97	136	140	500
22	6	9	10	4	29
25	14	22	15	8	59
27	39	54	38	11	142
31	18	38	27	9	92
35	4	27	12	4	47
36	0	1	1	0	2
37	2	16	6	2	26
40	0	0	10	6	16
41	9	38	45	35	127
42	5	5	7	8	25
43	10	13	13	5	41
44	9	73	73	13	168
45	41	98	166	63	368
46	12	69	55	28	164
48	24	245	226	151	646
49	98	224	122	21	465
51	28	47	59	64	198
52	11	39	32	11	93
53	42	101	55	39	237
54	7	14	13	30	64
55	1	10	7	0	18
56	17	86	63	9	175
70	0	0	0	44	44
71	3	7	14	15	39
72	2	3	5	10	20
73	7	2	8	3	20
74	16	13	18	3	50
75	10	4	9	5	28
81	2	11	10	6	29
82	0	34	17	5	56
91	3	13	17	15	48
92	3	15	20	13	51
95	6	11	14	12	43
97	47	44	48	54	193
	637	1542	1427	855	4461

Source: Army Educat.Req. Board Proceed. 1983, p. Encl. 2

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APPENDIX H

SHORTAGE ACADEMIC DISCIPLINES, FY 1982

ACADEMIC DISCIPLINE	NET SHORTAGE
Area Studies	-361
Operations Research Analyst (ENGR)	-280
Civil Engineering	-190
Organization Behavior (PERS MGMT)	-181
Comptrollership	-168
Journalism Writing Editing	-127
Engineering Electronics	-124
Joint Command, Control, Comm	-118
Physics Nuclear	- 82
Organization Behavior (OE)	- 67
Guided Missiles	- 57
Hotel-Restaurant MGMT	- 46
Engineering Aeronautical	- 42
Accounting Auditing	- 35
ADPS--Business	- 31
Electronic Warfare SYST TECH	- 30
Engineering--ADPS	- 25
Engineering Nuclear Effects	- 18
Production MotionPicture	- 17
Food Technology	- 15
Geodetic Science	- 13
Instructional Technology	- 11
Engineering Petroleum	- 7
Physics Optics Light	- 7
Engineering Automative	- 6
Geological Engineering	- 4
Engineering Marine	- 3
Maintainability ENGR	- 2
Advertising	- 1
Telecommunications MGMT	- 1
Engineering Space Facilities	- 1
Chemistry Physical	- 1
Physics Electricity Mag Elec	- 1
	-2072

Source: MILPERCEN files, 1981

APPENDIX I

EXAMPLE OF FAR MODEL FOR FA 53, ADP MANAGEMENT, FY83 MASTER'S LEVEL QUOTA PLAN DEVELOPMENT

STEP 1: Determine the upper and lower limits of the inventory keying on majors using a utilization rate range .50-.85[1]; and actual continuation rates for FA53, MAJ-LTC: 1.38 and LTC-COL: 2.37--to make 1.00 COL.

GR:	MAJ	LTC	COL
VAL:	98	59	42

98 .50 = 196	1.38 = 142	2.37 = 60
98 .85 115	1.38 = 84	2.37 = 36

STEP 2: Same as above, but key on lieutenant colonels.

161 = X 1.38	59 .50 = 118	2.37 = 50
94 X 1.38	59 .85 = 69	2.37 = 29

STEP 3: Same as steps 1 and 2, but key on colonels.

271 = X 1.38	198 = X 2.37	42 .50 = 84
159 X 1.38	117 = X 2.37	42 .85 = 49

STEP 4: For the LTC and COL computations, select the least of the upper bounds and the greatest of the lower bounds.

---

[1]Utilization rates between .33 and .67 are within the acceptable range; .50 is ideal. A utilization rate of .50 means half of one's assignments will be in one of his specialties. The higher the rate, the fewer officers in the inventory; the lower, vice versa. The selection rates of .50-.85 were used for FY83 to improve initial utilization rates and to reflect the fact that 85 percent of all colonels serve in TDA organizations and all colonel validations are in TDA's.

| 161 | 118 | 50 |
| 159 | 117 | 49 |

STEP f: Determine utilization rates for the upper and lower bounds to confirm if the inventory will remain within the utilization rate tolerance, .50-.85

| 98 | 161 = .61 | 59 | 118 = .50 | 42 | 50 = .84 |
| 98 | 159 = .62 | 59 | 117 = .50 | 42 | 49 = .85 |

STEP 6: Calculate the number of captains to school fully-funded to produce 159 to 161 majors holding FA53: 32. At this step and for following steps the FAR model is not used. Instead, the analyst must consider the continuation rate from captain to major and the fact taht the target population for schooling (those with 6-8 years commissioned service) will have 3-5 years of service prior to selection/promotion to major.

STEP 7: Adjust the fully-funded input based on the previous year's production from all other sources[2] except fully-funded. Consider only master's in disciplines which support FA53.

Calculated Input:	32
Less previous year's Production (other than fully funded)	9
Adjusted Total	23

STEP 8: Adjust down for budget constraints, if applicable.

STEP 9: Select officers for master's level schooling.

---

[2]This includes the Degree Completion Program (DCP), Army Degree Program for ROTC Instructor Duty (ADPRID), and Cooperative Degree Program (COOP).

SPECIALTY	AUTH			TARGET INV			TARGET URATE			1.0 SR
	MAJ	LTC	COL	MAJ	LTC	COL	MAJ	LTC	COL	CPT YG
* 11	33	9	2	32	23	10	1.03	.39	.20	6
* 12	10	10	0	12	8	4	.83	1.25	.00	2
13	11	5	3	14	10	4	.79	.50	.75	3
* 14	4	2	0	4	3	1	1.00	.67	.00	1
* 15	9	7	1	10	7	3	.90	1.00	.33	2
* 21	115	172	156	493	362	152	.23	.48	1.03	104
25	16	19	7	31	23	10	.52	.83	.70	6
27	67	43	15	92	67	28	.73	.64	.54	18
28	37	17	12	46	34	14	.80	.50	.86	9
31	31	22	9	52	38	16	.60	.58	.56	10
* 35	33	8	6	34	25	11	.97	.32	.55	7
* 36	1	3	0	4	3	1	.25	1.00	.00	1
* 37	12	8	1	12	9	4	1.00	.89	.25	2
* 41	80	57	44	164	121	51	.49	.47	.86	30
* 42	7	13	7	23	17	7	.30	.76	1.00	4
* 43	9	8	5	19	14	6	.47	.57	.83	5
* 44	19	27	13	47	34	14	.40	.79	.93	9
* 45	69	93	61	206	131	64	.33	.62	.95	39
46	54	38	21	97	71	30	.56	.54	.70	20
* 48	176	178	143	491	360	152	.36	.49	.94	87
* 49	212	128	27	228	168	70	.93	.76	.39	45
* 51	96	114	67	237	174	73	.41	.66	.92	49
52	43	33	11	66	48	20	.65	.69	.55	15
- 53	98	59	42	161	118	50	.61	.50	.84	32
* 54	17	14	32	97	71	30	.18	.20	1.07	18
* 71	10	11	10	33	24	10	.30	.46	1.00	7
* 72	4	9	8	24	17	7	.17	.53	1.14	6
* 73	3	4	4	12	9	4	.25	.44	1.00	2
74	10	9	5	20	14	6	.50	.64	.83	4
* 75	3	3	4	12	9	4	.25	.33	1.00	2
* 81	6	8	6	20	15	6	.30	.53	1.00	4
* 82	6	13	4	18	14	6	.33	.93	.67	4
* 91	8	19	12	38	28	12	.21	.68	1.00	8
* 92	15	20	10	36	26	11	.42	.77	.91	7
* 95	9	16	14	43	32	13	.21	.50	1.08	8
* 97	34	37	53	164	121	51	.21	.31	1.04	31
TOTALS	1367	1236	815	3092	2268	956				608

* DENOTES TARGET UTILIZATION OUT OF TOLERANCE (.90-.85)

Source: MILPERCEN files, 1982

APPENDIX J

CONCLUSIONS AND RECOMMENDATIONS OF THE OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE STUDY GROUP, 1979

The preceeding analyses and observations led to the following conclusions:

1. The current system of managing graduate education in DOD is difficult to explain and defend before Congress.

2. The average educational level of officers is rising, due mainly to other than fully-funded programs. Inputs from fully-funded programs have declined and now account for about 25% of the graduate-educated officers.

3. The average educational level of middle-rank and senior officers is comparable to that of executives in industry.

4. The benefits of education--other than in filling validated billets--are not considered in the current system.

5. Service initiatives may improve the process of determining officer personnel requirements for graduate education.

6. In the near term DOD does not have a feasible alternative to the degree tomeasure requirements or assets.

7. The current system has several management problems.

Requirements

- Requirements are not projected.

- Fully-funded students are sometimes assigned to disciplines where the Services have surpluses.

- Students are sometimes not assigned to disciplines where the Services have shortages.

- Requirements are not resource-constrained and are not explicitly prioritized.

Assets

- Assets are not fully utilized

    -- With 63K advanced degree holders and

    -- 18K validated billets

    -- Only 55% of the validated billets are filled

    -- Many officers with advanced degrees cannot be used in validated billets.

Data

- Data reporting is inadequate. The Services

    -- cannot identify usable assets

    -- cannot manage non-funded degrees

- OSD does not have the resources to manage graduate education in DOD.

F. RECOMMENDATIONS

Based on the above conclusions, the Department of Defense should implement the following:

1. Improve the management of graduate education in DOD

    a. Requirements:

        - Direct the Services to prioritize validated billets (50% Priority I, 30% Priority II, 20% Priority III).

        - Direct the Army, Air Force and Marine Corps to establish differential manning factors by grade and career field.

        - Program a research effort to project graduate education requests by Service and disciplines through the year 2000.

        - Evaluate the Service initiatives now underway or planned.

- Establish a study group to evaluate inconsistencies in validated billets within and between Services.

b. Assets

- Direct the Services to review the inventory of advanced degree holders and designate individuals as usuable and non-usable, specifying the reason why non-usable degrees cannot be used.

- Maintain retrievable data on funding source, by Service, by discipline (career field), specifying usable and non-usable and submit annual reports to OSD.

- Establish a DOD policy to fund graduate education only where shortages exist.

- Establish minimum utilization policy for DOD-funded graduate education.

2. Manage graduate education to maintain DOD comparability with industry.

3. Establish a DOD element such as a Defense Schools Agency with adequate resources to manage graduate education.

Source: [Ref. 37:pp. 28-31]

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